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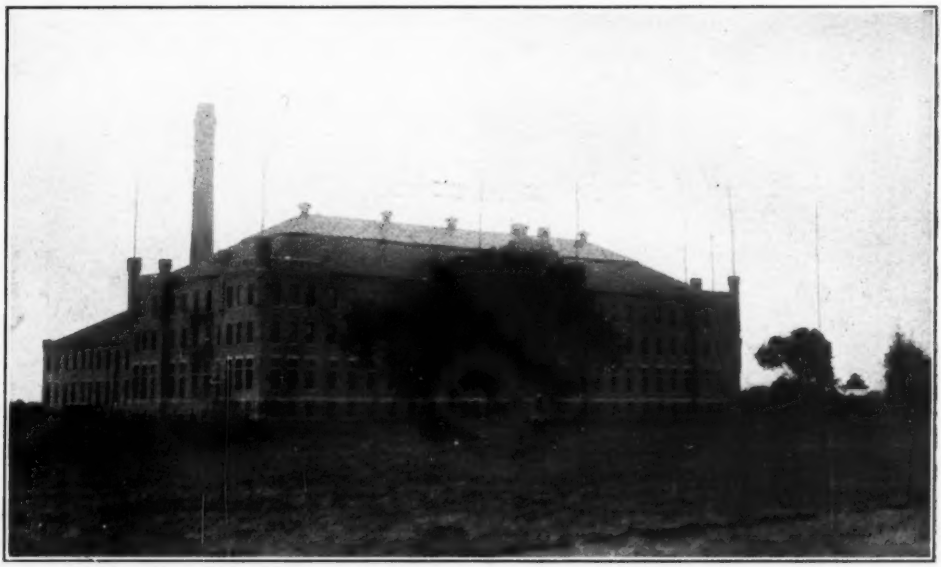

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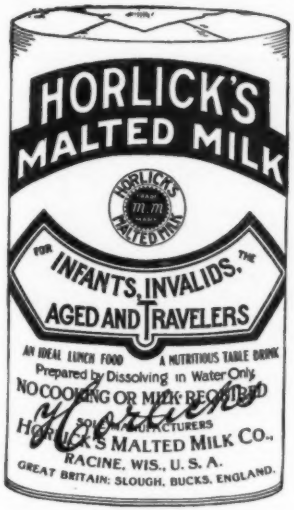

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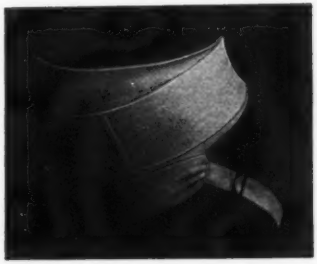

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THE JOURNAL OF THE
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RELATION OF FUNCTION TO STRUCTURE

A STUDY OF THE CAUSE OF THE PERVERSION OF FUNCTION PRODUCED BY THE OSTEOPATHIC LESION, WITH PARTICULAR REFERENCE TO CHANGES IN THE MOLECULAR AND IONIC CONTENTS OF THE BODY FLUIDS

LEWIS G. ROBB, D. O.,
San Francisco

WE have well established the existence of the osteopathic lesion and are bringing forth evidence every day to support our contention that it does cause and maintain functional disorder; but the mechanism by which such effects are brought about, which is necessary to the proof of our claims, has not been sufficiently established. Too much emphasis has been blindly expended upon pressure phenomena, with little or no attention to changes in the molecular and ionic content of the body fluids. In these, I think, lies the secret[1] of most of the phenomena attending the osteopathic lesion. I will attempt to show the relation that such changes have to the fundamental vital processes of our every-day economy, and give, if possible, a suitable osteopathic explanation.

All physiological and pathological processes, no matter how large or small, are primarily cellular changes. That is to say, a rearrangement of the molecular aggregates contained within the cell and an interchange of substances between the individual cell and its environment. Obviously, any alteration in the environment in turn must affect the cell, and as every cell is a material part of the individual, when this process oversteps physiological limits, it will interfere with the life of the organism. This is true, because while the organism is in one sense a complete unit,[2] in another sense it is compound, formed of a great number of different structures, each made up of different cells and the products of their activity, these cells and the structures composing them are at the same time, to an extent varying in the various organs, interdependent and independent. So far as they are interdependent, disturbances or disease of a given organ is liable to affect the other organs and the body as a whole, causing constitutional disturbances; so far as they are independent, local disturbances may remain wholly local.

All anabolic and katabolic changes are brought about by the liberation of energy within the individual cell from chemical and physical changes of the constituent parts of the cell. In these changes food materials are used up and waste products formed. Since the cells of all higher organisms have not the power of the amoeba they must depend upon their environment (blood and lymph) to bring them food, equalize their temperature and dispose of their waste products (by neutralizing through its amphoteric properties the poisonous acid and hydroxyl radicals produced during cellular activity, as well as by acting as a common carrier). These cells are all highly specialized parts of a complex being and very sensitive to environmental changes so that their nutriment must be brought to

1. I do not want the reader to get the idea that I am making light of pressure effects. A greater or less amount of harm is no doubt produced by them, and perhaps in a few instances gross pressure is responsible for major disorders, but certainly it is the exception rather than the rule. The closing of small veins, capillaries, and to a less extent the lymphatics, by muscular contracture, is however responsible for the accumulation of irritable products of metabolism and these, rather than the pressure, irritate the nerve endings.

2. Adami, Princip. of Path., Vol. 1, page 20.

them in a particular form and their ion environment must be of a particular kind or they cannot utilize it.

One of the most familiar examples of the sensitiveness of the body cells to changes in its ionic environment is the regulation of the respiratory movements[3] in accordance with the needs of the organism. Especially is this noticeable of the activity of the muscles for oxygen and the demand for increased ventilation rendered necessary by the enormous rise of gaseous metabolism accompanying muscular exercise; the exciting agent in this case is carbon dioxide acting on the centers. I will show in another part of this article that carbon dioxide also materially affects the irritability of nervous tissue in general. The carbon dioxide effect is noted more distinctly on the respiratory center, not through any specific influence of the carbon dioxide, but through the development of a specific sensibility by the cells of the respiratory center to carbon dioxide.

The development of such specific protective measures are common to the habits of all component parts of the organism, and this protective habit determines in a great measure the ultimate fate of all strange, or I might say, unnatural nervous impulses. They only cause activities detrimental to the life of the organism when a heightened irritability of some part exists (excepting when they cause overstimulation,[4] exhaustion, etc.), making that the path of least resistance; the continued passage through this path makes of it a habit path. The fact that this is general is only an exaggeration of the conditions attending all local retention of the products of metabolism.

In our overzealous efforts to explain the ill effects of the osteopathic lesion by resort to such mammoth structures as the impingement of a nerve trunk in an oversized intervertebral foramen, the effect of pressure on the nerves supplying the joint surfaces, reflex effects from malposition[6] of the joints and superincumbered parts, etc., we have overlooked a most fundamental principle, *i. e.*, that it is not possible to begin with gross anatomy and build down, we must begin with cellular physiology and build up. We cannot say that this particular articulation is subluxated and that the corresponding nerve is pinched in the intervertebral foramen setting up a train of afferent impulses (from pressure stimulation) which work havoc with this, that, or the other organ or function. We must explain why such impulses are initiated, and in explaining this, careful consideration must be given the conditions actually present, *i. e.*, localized congestion, local accumulation of the products of metabolism and the attendant changes in concentration and specific ion content, together with such effects as might be produced by contractured and swollen tissues. In all instances we are dealing directly with the peripheral nervous apparatus and only indirectly (reflexly) with the central nervous system.

The peripheral nervous apparatus is subject to electrical, chemical and mechanical stimulation in about the order given. We will limit the term mechanical here to its narrowest sense, *i. e.*, pressure stimulation. Osmosis and diffusion, as I will point out later, are powerful excitants of nerve, and properly come under this head. Electrical and chemical stimulation are closely allied, chemical stimulation in the living organism being due to a transfer of electrically charged ions between the stimulated organ and its environment. Mechanical (pressure) stimulation produces an impulse, if suddenly applied; if applied gradually, or long continued, it at first increases the excitability, but soon produces a con-

3. Of course attending all such increase of respiratory movements there is a general acceleration of the cardio-vascular system, and up to a certain point more general irritability of the entire nervous system, *i. e.*, the general inertia of the organism is toward increased activity.

4. During excessive functional activity the reserve force of the cell is first used up, all the protoplasmic stores becoming exhausted, and next the extra energy demanded has to be obtained from the disintegration of the active cell substance, cytoplasm and nucleoplasm. The result is cell exhaustion and disintegration.

5. Adami, Princip. of Path., Vol. 1, page 1.

6. All of these causes are factors which must be given consideration, and the latter in particular; but they take an insignificant part in the production of disease as compared with other changes occurring in and around the lesion.

dition of partial or complete block[7] (in the portion affected) and leaves a region of heightened excitability a greater or less distance from the injured area. Increasing the temperature above 35 degrees centergrade and section have the same effect. The efficiency of all methods of stimulation depends upon their ability to produce chemical or chemico-physical changes in the nerve (liberation of inorganic potassium salts, etc.).

Cellular activity, according to Pflueger, is constantly occurring in the living cell and leads to the formation of molecules or groups of molecules having a high affinity for oxygen. It is these intracellular reducing substances that combine in the first instance with the oxygen, leaving the blood vessels and, according to Ehrlich, are able to tear away the oxygen from such substances as methylene blue.[8] It is possible that these bodies when they meet with insufficient oxygen for their saturation act as excitants on nerve cells so that their activity is carried on by auto-stimulation,[9] and it is not impossible to suppose that other cells, glands, etc., would be so influenced.

Aside from this specific activity, the osmotic properties of such bodies must not be neglected for each cell in the body is practically the inner vessel[10] of a diffusion apparatus separated from the surrounding fluid by a membrane; this membrane has no anatomical existence, but the colloidal nature of the protoplasm has the same final effect. Starling[11] has shown that all the substances liberated in the cell tending to decrease surface tension migrate to the surface and there form a membrane. The exact nature of this membrane has been somewhat disputed, Overton[12] has determined that those substances are able to penetrate into the living cell and have in common the property of being soluble in phosphatides (lecithin, protagon and cholestin), and he and Albrech have independently suggested that by peripheral concentration these phosphatides constitute the semipermeable cell membrane. Brailsford Robinson demands a concentrated proteid membrane with underlying lipoids—whether proteid, lipoid or both. All workers are agreed that such a concentration membrane does exist. Koeppe,[12] Peskins and others concluded that the heamolitic activity of substances such as chloroform, ether, bile salts, etc., probably depend upon their being solvents of lecithin.

All cells are permeable[10] **by water,** but each kind of cell appears to differ in the facility with which it permits the permeation of salts and the other bodies dissolved in the body fluids. Some, for example, allow the passage of ammonia readily, while others refuse it entrance; some take up sodium sulphate as readily as sodium chloride, while others accept the latter and reject the former. It is this selective permeability of the cell (concentration membrane) that controls the life of the organism, and that it is due to differences in the concentration membrane is abundantly illustrated by the fact that substances capable of changing the nature of this membrane[13] alter the permeability of the cell. The irreciprocal permeability of the mucosa of the alimentary canal for sodium chloride is at once abolished if these cells be subjected to small amounts of sodium floride, distilled water, or to temporary anemia, and any further action on their part is apparently determined entirely by molecular concentration.[14]

This sensitiveness to alteration in the ion

7. For an example of this in the living animal, see Deason and Robb, *American Journal of Physiology*, Vol. XXVIII., April 1, 1911, No. 1, page 57. We were able to produce a degree of block by mechanical means which equalled the resistance to the passage of the respiratory impulse from one side of the cord to the other, so that with the cord hemisected above the origin of the prenics we obtained equal contractions of both halves of the diaphram from the normal respiratory impulse.

8. *Das Sauerstoffbeduerfness des Organismus*, Berlin, 1815.

9. Schafer, Vol. 2, page 290.

10. A. R. Cushing, Reference Hand Book of Medical Sciences, Vol. 8, page 471.

11. Starling, Fluids of the Body, page 18.

12. Adami, Princip .of Path., Vol. 1, page 96.

13. The characteristic qualities of every tissue are partly due to the fact that its ion-proteids contain ions in definite proportion, any change in this proportion is accompanied by a change in the properties of the tissue.

14. Starling, Fluids of the Body, page 54.

content of the surrounding fluid is nicely illustrated by the gammarus, a marine crustacean found in the Bay of San Francisco. When placed in distilled water its respiration stops in about thirty minutes and can only be started again by placing the animal in sea water within about ten minutes. If the animal is placed in a solution of sodium chloride or cane sugar it dies as quickly as in distilled water, while in a solution containing sodium chloride, potassium chloride and calcium chloride, in proper proportions, it lives as long as forty-eight hours, and if a little magnesium chloride is added it will survive as long as in sea water.[15]

The swimming motions of polyorchis (jelly fish) are about as sensitive as the respirations of the gammarus, being in a high degree dependent upon the presence of magnesium salts and easily inhibited by the addition of calcium or potassium, while the isolated center will instantly beat in calcium chloride solution. And after a number of hours in sodium chloride solution, it is inhibited by the addition of magnesium. Decalcifying salts and acids cause the center to beat, while alkalies inhibit such beats.[16]

This does not mean that the plasmahaut is permeable to all these salts, but that their presence or absence causes a certain stimulation which alters the surface tension, thus interfering with or annulling the reactions of contractility, transfer of gases, or food assimilation, which are necessary to the proper function of the organism.[17] Now if the intercellular fluid contains any substance which is not capable of penetrating the cell, it must exert osmotic pressure on the cell; and unless this pressure is counterbalanced by other bodies in the interior of the cell which similarly cannot escape from it, the fluids in the cell will be drawn out and shrinkage will result.

Every cell in the body, then, must be considered as existing in a condition of equibibrium;[10] the osmotic tension of the salts, etc., in its interior is pitted against that of the surrounding fluids, and the smallest change in either of these leads to an inflow or outflow of water from the cell. This produces a decreased potential differenc as the rapidly moving ions pass out, followed by an increased potential, owing to an accumulation of the slower moving ions. Such changes are continually in progress, for as the proteids and carbo-hydrates of the cells are broken down into simpler bodies, soluble in water, each molecule so formed acquires osmotic properties, and either diffuses freely into the surrounding fluids, or causes an inflow of water into the cell. In either case the equilibrium is disturbed until the new product is removed by the excretory functions, and if metabolism is long continued these slowly moving ions may accumulate at the point of auto-stimulation.

The importance of diffusion and osmosis in the functions of the body cannot therefore be estimated, in fact, it may be said that while the more obvious movements of the fluids of the body are determined by the circulatory mechanism, the finer but no less important exchanges between the cells and the intercellular fluid is in large part directed by the laws of diffusion; and although, as J. Loeb[18] has shown, the ions which diffuse into muscle tissue enter into a combination with some constituent of the tissue, altering its substance chemically, the preponderence of acid or basic ions determine the reaction of the ion proteid. But even in view of the complicated character of the changes that must occur in a cell when a salt enters, we must not lose sight of the fact that the addition or extraction of water in the living cell is one of the most efficient environmental stimuli known, and in order that this will not take place a perfect osmotic equilibrium between the fluid content of the cell and the surrounding fluid is necessary, whether or not the plasmahaut (concentration membrane) is permeable to the dissolved sub-

15. J. Loeb, The Dynamics of Living Matter, page 46, 1906.

16. J. Loeb, *Jour. of Biol., Chem.*, 1905-6, 1, page 427.

17. Starling, Fluids of the Body, page 32.

18. J. Loeb, *Jour. of Biol., Chem.*, LXXI., page 457, 1898; LXXV., page 303, 1899.

stances. This action is always present when the molecular concentration of the body fluids or cell substance is disturbed, and is independent of any specific action of the dissolved substances such as acid or basic radicals.

We are more or less familiar with this osmotic effect on the red blood corpuscle, but possibly have not realized that this same action occurs to a greater or less extent in the metabolism of all cellular structures, and when once the normal boundaries are broken, it acts as an efficient irritant to the surrounding tissues, as is evidenced by the gastric irritation from the ingestion of quantities of highly concentrated food (sweets, chocolate candy, etc.), and by the cerebral and cord symptoms from injection of non-isotonic solutions into the blood of animals, or by otherwise distributing the fluid environment of the parts.[A] Distilled water[20] strongly stimulates muscle, but kills nerve excitation, the latter being more sensitive; in fact, a nerve is so definitely sensitive[19] to alterations in the concentrations of the surrounding fluids that it is possible to determine the concentrations of a solution by placing it upon the surface of a nerve, instead of the normal external solution, and observing the alterations produced in the electromotive force of this nerve. Indeed it is possible to determine the concentration of the specific electrolites contained within the nerve by using a solution which will reduce this electromotive force to zero.

In speaking of the effect of different alkali and acid solutions on the electromotive force and resistance of nerves, J. S. MacDonald[21] states that the resistance of nerves varies with the nerve and with the alkali, this variation being dependent upon the character of the nerve, and presumably the individual fiber, upon its sectional area, and probably upon intrinsic difference between the average salt content of the tissues of different animals. The shorter the length measured the greater the resistance per centimeter. In a nerve 15 M. M. long, the resistance equaled 19.700 ohms per C. M., while in a nerve 83 M. M. long, the resistance equalled 16.080 ohms per C. M. The average resistance in different animals is given as:

Vagus,	Horse	2,000 ohms per CM.
Vagus,	Dog	12,500 ohms per CM.
Vagus,	Cat	3,100 ohms per CM.
Sciatic,	Cat	4,500 ohms per CM.
Sciatic,	Dog	3,500 ohms per CM.

The resistance is also greater when measured from one point on the longtitudinal surface to another point on the longtitudinal surface, than when measured from longtitudinal surface to cross section; and greater still than the resistance of a similar length bounded by two cross sections.

After a nerve has been removed for some hours from the animal, the electromotive force may lose about nine-tenths of its original value, and if then placed for a short period (about five minutes) in tap water, the maximum electromotive force obtained is considerably greater than that obtained from the same nerve when freshly removed from the recently killed animal; this increased value remains for some time, its rate of fall being similar to that of the original maximum. If one waits after the death of an animal until rigor mortis is completely established, and a nerve be then removed, only a small trace of demarcation current is obtainable from it; but if placed in tap water for five minutes an electromotive force is obtained as high as that of the fresh nerve after immersion in tap water for five minutes.

The electromotive force is decreased by immersion in 0.9 per cent. saline solution and increased by immersion in a 0.45 per cent. solution or less, each further dilution increasing the electromotive force. A source of electromotive force quite comparable in value to the maximum value of the demarcation source of a nerve is pro-

19. The Propagation of Physiological Change. J. S. MacDonald. Science Progress, 1907-8.

A. The contents of a nerve exerts an osmotic pressure upon the surface of its enclosing sheath, and this pressure is normally balanced by the pressure of the solutions outside.

20. Kune Causation of Vital Movements. Croonian Lectures. Proc. of Royal Soc., London. 1888.

21. The Demarcation of Mammalian Nerve. Proc. Roy. Soc., London. 67. 1900. July 28. J. S. MacDonald.

duced by putting a drop of saline on one end of an evenly wetted bundle of twisted threads. This is due presumably to the upsetting of the balance between the osmotic processes taking place in the two non-polarizable and similar electrodes. (Sept. 25, 1900). Besides the changes in electromotive force, tap water produces an increase in weight, length, rigidity, elasticity and a diminution of compressibility and conductivity. This is termed water rigor.

SCIATIC NERVE OF CAT.

Twenty minutes' immersion in tap water.

	Before	After
Weight in Grams	0.237	0.317
Length in Centimeters	4.8	5.4
Resistance in Ohms	14.200	18.400

With the exception of the changes in conductivity all the changes are rapidly developed, reaching their maximum within a short time after immersion in water, this condition may remain for days to be quickly abolished by a short immersion in 0.9 per cent. saline. The change in conductivity is a much more gradual one, as is well shown by the details of the following experiment in which the appearance of rigor was fully developed within the first hour; the available electromotive force had risen to its maximum of 0.027 volts from an initial value of 0.018 volts, whereas the nerve still retained seventy per cent. of its original conductivity. Thus it is seen that the changes in molecular concentration are able to and do increase the irritability of the involved structures out of proportion to the loss of conductivity.

Sciatic nerve of the dog 5 centimeters long placed in water and examined every 25 minutes:

RESISTANCE

(A) in ohms, and (B) in terms of the original unity.

	A	B
Nerve at first	15.900	1.00
After ½ hour	20.400	1.28
After 2 hours	39.800	2.50
After 4 hours	88.700	5.58
After 24 hours	307.500	19.34

The condition of rigor is most completely produced by the action of water, but differs only in degree from dilute saline solutions, e. g., 0.6 per cent. sodium chloride solution. These changes are due to osmosis and diffusion and the conductivity is reduced by an increasing loss of electrolites by processes of diffusion. They differ both in character and degree from rigor mortis and can be produced in a nerve from a "several days' dead dog." MacDonald considers the extreme case studied: Namely, the nerve, after immersion in tap water, is but an extreme variation of a pre-existing condition, in fact the internal structure of the nerve forms what is to all intent and purposes a stronger aqueous solution of electrolites than is found in its superficial parts, just as an arrangement of solution as the character of the resistance and internal polarization of nerves has always made probable. If this is true, all the arguments which can be adduced to explain the electromotive force obtained from the extreme case can be transferred, when modified, to the normal condition.

Moore, Roof, Whitney[22] and others, selecting another field, have studied the effect of alkali and acid upon cell division and growth, and they have shown that a slight increase in alkalinity favors growth and cell division, and at the same time tends to produce irregularity in size and shape of the resultant cells with multinuclear formation. In the case of acids no such favoring action is observable, but from the beginning cell divison and growth are inhibited, the acid acting upon the chromation of the nucleus, reducing its quantity and causing it to stain faintly with no proliferation of nuclei in undivided cells.

The extreme limits at which life and cell division are possible lie close together, indicating that the cell is very sensitive to even slight changes in the concentration of hydrogen and hydroxyl ions, thus the addition of so little as .0015 M. of either alkali or acid to sea water practically stops all growth.

On account of the presence of phosphates and carbonates in sea water, the changes in acid and hydroxyl ions caused by such additions cannot be large. A disturbance of the equilibrium toward the acid side is much

22. Effects of Alkali, etc., on Egg of Echinus. Moore, Roof and Whitley. Proc. Roy. Soc., London, 77, 1906, page 102.

(Continued to page 237.)

METHODS AND PRECAUTIONS IN THE TREATMENT OF CATARRHAL DEAFNESS

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Chicago.
Director of The A. T. Still Research Institute

The Value of Diagnosis: One must learn much by experience and his own mistakes, but ignorance in diagnostic methods is inexcusable when such information can easily be had. Our osteopathic colleges have experienced teachers in the specialties and there are always many medical clinics and post graduate schools where special courses in diagnosis can be had. Dr. Granberry has done much to apply diagnostic methods to this new method of treatment and a careful study of his report will be of value. Dr. Edwards has added some new features which are very valuable in diagnosis and prognosis. We must diagnose to protect our patients from dangerous treatment; to protect our patients one from another and to protect ourselves from infection and failures in treatment. It is due the patient that we give him an honest opinion and it is due ourselves that we know what may be accomplished by our methods.

In diagnosis and prognosis we must know these things: That not all ear affections are caused by stenosis of the Eustachian tube; that diseases of the nerve or cochlea and drum, occlusion of the external auditory meatus or otosclerosis cannot be successfully treated by dilating the orifice of the tube, and that alone; that deafness due to syphilis and other specific infections should not only be treated with great care but that the prognosis is unfavorable.

Throat Washes: Recently we have been working on a series of experiments in which fifteen different throat washes and so-called antiseptics were tested as to their antiseptic properties and their value in ridding the nasal cavities and pharynx of excess of mucus and other wastes. As yet we have not found one that will kill the pathogenic bacteria common to the mouth, nose and throat, even when mixed with sputum in 100 per cent. strength for an hour. We have found a few that have very slight antiseptic properties and which also do some good as general cleansers. Normal salt solution is one of the best and safest of all we have yet tried. Salt solution in from five to ten per cent. solution when mixed with equal parts of glycerin can be used effectively in the pharynx in cases where there is a great excess of mucus. By first swabbing the nasal cavities with chondrus jelly this may also be used through the nose. I have used salt solution in even higher percentages, but it is very irritative if continued. The results of our experiments showed Dr. R. H. Williams' antiseptic and Lavoris to be effective in removing mucus. They also have slight antiseptic properties and are both pleasant to the patient, but they should not be swallowed.

It must be remembered that no so-called anti-septic solution can free these structures from bacteria without doing great harm to the tissues and they must, therefore, not be used excessively. It must also be remembered that none of them has any therapeutic properties other than cleansing and even this is very limited.

Asepsis: The three words—ignorance, carelessness and sepsis properly belong together. If, by careful examination, the nasal cavities, mouth and pharynx are found to be free from any specific infection, there is little to be feared from a careful dilation of the Eustachian tube or from any other corrective treatment, whether throat washes are or are not used. It is best, however, to cleanse the parts with as little irritation as possible. If there is a specific infection, no method of cleansing is reliable and the infection should be treated before corrective work is done.

For sterilizing the hands, nothing is as effective as a scrub brush, soap and water, and I believe this is enough. Dr. Granberry dips his finger into tincture of iodine after scrubbing. Dr. Edwards uses lysol solution for washing. We have tried antiseptic lubricants, but find them of no special value, besides they irritate the tissues. Rubber gloves and finger cots obscure the sense of touch. After scrubbing, the hands

should not be dried but the finger to be used should be lubricated with chondrus jelly or some other non-irritative lubricant before entering the mouth.[1]

All instruments should be metallic when this is possible, and should be thoroughly boiled. No other method of sterilizing is as easy and certainly not as effective. An electric sterilizer is an attractive piece of apparatus and is the first piece of apparatus the physician who expects to do special work should buy.

What We Hope to Accomplish by Treatment: There are, in my opinion, at least five essential things to be accomplished in the treatment of catarrhal deafness which in their order of importance are as follows:

(1) The correction of interosseous and other structural lesions. I put this first because in many cases I have found that no difference what else was done, the desired results were not obtained until adjustments were effected. Many osteopathic lesions, such as cervical, upper dorsal, hyoid, mandibular, etc., are causative factors. Dr. Edwards considers upper dorsal lesions most common and most important. Dr. McConnell considers upper cervical lesions most important. The Old Doctor has often called our attention to mandibular lesions in association with ear and eye affection. Dr. McConnell some years ago urged the value of deep muscular work under the angle of the jaws for the purpose of getting good lymphatic and venous drainage. The Old Doctor has also many times demonstrated this, and Dr. Edwards has shown how this may be used as a method of diagnosis as well as of treatment. Recently I had a case which made remarkable progress and found that she had had a thorough course of treatment before coming to me. She was prepared for special work.

(2) In the treatment of any middle ear affection the Eustachian tube must functionate. If stenosed, the pharyngeal portion may be effectively dilated by the finger and later the remaining portion should be opened and the middle ear freely ventilated if this is not accomplished by the digital work alone.

The dilation of the orifices of the tubes may be completed at one operation, using an anesthetic if necessary, as Dr. Edwards does it, or they may be dilated gradually. I prefer the second method because there is little or no pain, no nervous shock, no danger from trauma or infection, no after effects and in most cases the hearing is not temporarily impaired but often improved from the first. This is not condemning any other method, because I believe there are certain cases in which the more radical technique is better and doubt if any other method will get results. I think, however, it is not best to cause any more trauma than is necessary to effect a good dilation of the orifices of the tubes.

The precautions to be observed in this technique are to be fairly sure that the Eustachian tube needs to be dilated; to be sure that there is no specific infection of the parts treated; to have the hands surgically clean, and the nails trimmed back to the cushion; to have the pharynx free from excess of mucus, and to know that the patient has no bad heart lesion.

It is best to remove any foreign material from the fossa of Rosemüller and to remove any adenoid tissue from the orifice of the tubes or other parts of the pharynx, but this need not all be attempted at one operation. It is my opinion that beginners should be very careful not to cause unnecessary trauma, because they can only be sure of their technique after much practice. A mouth gag, with pieces of rubber tubing slipped over the jaw plates, should always be used, as it is easier for the patient because he has something to bite upon and it is better and safer for the doctor.

If the gradual dilation method is used, the tube may be dilated once or twice, each week, until sufficient dilation is secured. The soft palate should be carefully but firmly drawn forward, which tends to

1. Chondrus jelly may be made by boiling an ounce of chondrus (Irish moss) to a jelly, filtering through linen and adding five or ten per cent. of glycerin and five per cent. alcohol. This is also an excellent hand and face lotion to prevent chapping. It may be scented with a few drops of any volatile oil.

loosen and dilate the cartillaginous portion of the tubes. The patient may be operated on the table, the physician standing at the head of the table or the patient may be operated (Dr. Fryette's method) while seated in a chair, with the physician's arm supporting the patient's head, and holding the jaw down. The second method is very good for children because they are less excited. The right index finger is usually used for dilating the right tube, and the left finger for the left tube, but the right finger may be used for the left tube, passing it across to the opposite side. This "cross technique," as Dr. Edwards terms it, is often best, as one may enter the tube more directly. After the operation, I have the patient gargle some pleasant, slightly astringent mouth wash and I prefer it cold because it seems to relieve the irritation and stop hemorrhage. Hemorrhages, however, in my opinion, need occur in but few cases, if the work is carefully done.

This technique should not be attempted until the physician has studied a number of dissections and has a definite idea of the exact location of the structures and how they are to be reached. This precaution is not offered because of the so much danger of doing actual harm, for if the operator is clean and careful, there is no great danger, but he may not know how to get results and the method may be condemned because of his lack of knowledge.

The digital dilation of the orifice of the tube is often not sufficient to ventilate the middle ear, in which cases no results will be obtained. It is usually best, therefore, to inflate the tube and middle ear by means of the Politzer method or the Eustachian catheter, every two or three days, until the stenosis is thoroughly relieved. Any standard text will explain these methods.[2]

2. The following books are recommended:
   1. Diseases of the Nose Throat and Ear. Ballenger—1914 edition.
   2. Diseases of the Ear. Politzer.
   3. Diseases of the Ear. Kerrison—1913 edition.
   4. Diseases of the Ear, Nose and Throat. Phillips—1913 edition.
   5. Diseases of the Ear. Bacon.
   6. Diseases of the Nose and Throat. Coakley.

The soft silver catheter with enlarged tip is best, because it can be boiled and bent to suit the individual case. Great care should be taken to avoid pain and trauma while using the catheter. The least possible pain and irritation at all times is, in my opinion, desirable because there can be little or no actual improvement until the shock and irritation have subsided and normal healthy tissue is restored. It is best to wait until the irritation from the dilation of the tube has subsided before using the catheter. The Politzer or the modified Politzer method is best where there is much tenderness of the nares or pharynx. I prefer the Victor tankless air pump in preference to the Politzer bag, because it is always ready and easy to operate and the pressure can be regulated. Before inflating the tubes with the catheter, I prefer to apply suction through the catheter and thus free the orifice of the tube from any fluid or mucus. This minimizes the danger of forcing the material into the middle ear, and there really is some danger, unless this is done.

Some specialists use bougies for opening the tubes after the digital operation. Before passing the catheter, I find it best to thoroughly dilate the nasal tract with a long nasal forceps, containing a pledget of cotton dipped in chondrus jelly, as this opens and lubricates the passage and prevents excessive pain. I do not use cocaine, because I don't find it necessary and because in some cases, at least, it seems to retard results. It would seem that careful technic is always preferable to drug anesthsia, where this is possible. A large percentage of head noises can be relieved by a thorough inflation of the middle ears, but not all cases can be successfully treated in this way.

Treatment of External Ear: The diagnosis and treatment of the external meati and drums can only be learned by practice. The first essential thing to learn is that instruments other than a soft rubber syringe, an irrigating apparatus, an aluminum cotton applicator, an electrical otoscope, head mirror and reflecting lamp are not often needed. These instruments are all absolutely necessary, but curretes and forceps are too often and too carelessly

used. Syringing the ear with a five per cent. or ten per cent. solution of sodium bicarbonate, or glycerin or dilute liquid soap will usually soften ceruminous plugs so that they may be removed by irrigation. If this is insufficient, these solutions may be left in the ear over night. After this treatment, the ear should be thoroughly irrigated with warm water and dried by means of absorbent cotton and the applicator. Great care must be taken that the pledget of cotton extends beyond the end of the applicator and that no undue pressure is exerted upon the drum. In some cases, the drum will be found coated and it must be cleaned by the same method. I have found many cases in which no other treatment was necessary to restore normal hearing. If the "ear wax" continues to form or if an insufficient amount is present and the meatus and drum are dry it means, I believe, that the mandibular or upper cervical lesions have not been corrected. This part of the treatment is very important and must never be neglected.

Treatment of Associated Structures: It must be remembered that very little benefit can be expected until the pharyngitis, rhinitis or tonsilitis, which is most likely the primary cause of the deafness, has been relieved. A thorough opening and drainage of the nasal cavities, as Dr. Edwards has described, will relieve most cases of hay fever. A thorough cleansing of the pharynx by means of the finger and throat washes, will do more than anything else to relieve catarrh. By applying one finger inside and posterior to the tonsil and soft palate and the other hand external to the tissues beneath the angle of the jaw, the venous and lymphatic drainage to the tonsil can be restored and mucus, pus or other foreign material in the crypts can be removed. Massage of the tonsil tissue is not necessary or even indicated in most cases. At least it does not seem to be so important as the above described treatment. The sinuses, teeth and other structures must also be examined and the proper treatment given.

Dr. Edwards and I have found that by this thorough method of treatment, the eyes are also improved. I have a few cases who are now leaving off their glasses after they had worn them for from one to five years. There is nothing strange or wonderful about this, because it is only what we may expect from thorough osteopathic treatment and I want to urge again that the special technique is not by any means the most important. The supportive treatment, consisting of the proper adjustment of all structural lesions, the proper dieting of the patient, the correction of any injurious habits, etc., are all very essential. In short, we must treat the patient and not the disease he may have, or any one organ.

Case Reports, Causes and Results.

Since October first, I have examined 326 cases with some ear, nose or throat affection, chiefly partial deafness. Not all of these cases were treated. One hundred and fifty of these were examined at various association meeting, and I, therefore, had little chance to determine the results of treatment.

The following are the findings from my first one hundred cases. None of these were selected and none were excluded, but all cases are reported in which sufficiently complete records could be obtained.

Probable Cause of Deafness.	Number of Cases Treated.	Normal Hearing Restored.	Good Results.	Partial Results.	Negative Results.
Pharyngitis (catarrh)	39	9	23	6	1
Otitis Media	15	1	8	5	1
Tonsillitis	8	2	3	2	1
Scarlet Fever	6	....	4	1	1
Indeterminte	11	2	6	2	1
Influenza	4	2	....	2	....
Malaria	4	....	3	....	1
Adenoids	2	....	1	....	1
Syphilis	2	....	....	1	1
Typhoid	2	1	1	....	....
Diphtheria	2	....	....	2	....
Gonorrhea	2	....	....	1	1
Headache Powders	2	....	....	1	1
Electrical Treatment	1	....	....	1	....
	100	17	49	24	10

This summary gives only a general idea of the nature of cases of deafness amenable to this method of treatment, but it is not of great value because in most cases there were two or more probable causes and it was

PLATE I. (Key to X-Ray Plate).

F. P. Millard.

1—Orbital cavity.

2—Tympanum (middle ear cavity).

3—Wire extending into tympanum.

4—Condyle.

5—Position of cartilaginous portion of Eustachian tube.

6—Ostium pharyngeum.

7—Mandible.

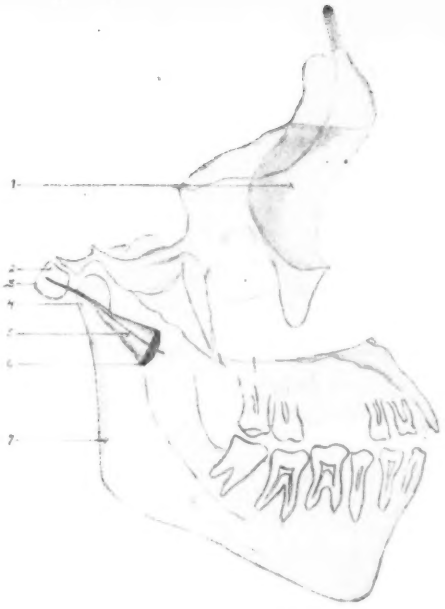

Plate I.—Millard.

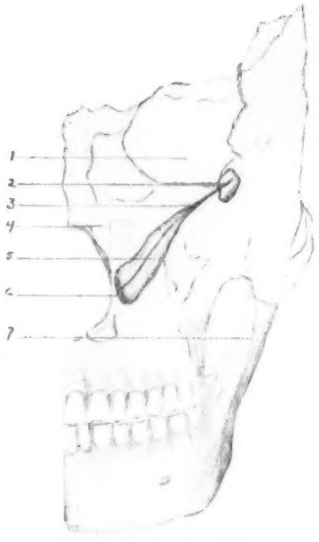

Plate II.—Millard

PLATE II. (Key to X-Ray Plate).

F. P. Millard.

1—Orbit.

2—Wire extending through Eustachian tube into tympanum.

3—Osseous portion of Eustachian tube.

4—Nasal bone.

5—Cartilaginous portion of Eustachian tube.

6—Ostium pharyngeum.

7—Mandible.

NOTE.—These two figures of the Eustachian tube were traced by Dr. Millard from X-ray photographs, the latter not being available for making distinct halftones. The photographs were made by Drs. Collins and Millard at the Research Institute. The dissections were made by Dr. Hollands. A small copper wire was molded to fit the tube and bismuth paste was then injected about the wire to completely fill the tube, but the tube was not over distended.

The measurements of this tube are as follows: Osseous portion seventeen-thirty-seconds inches long. The cartilaginous portion seventeen-sixteenths inches long and the pharyngeal orifice of the tube is one-fourth inch in diameter. Measurements of the tubes of five other heads show the above to be a fair average.

The head from which these photographs and measurements were made was embalmed by Professor Albert Worsham, of the Worsham School of Embalming, care being taken to maintain the tissues in their natural state and proportions. Cadavers which have been embalmed for a long time or those which have been allowed to dry, are of little value for careful work. It will be remembered that this fact was shown by Dr. Deason in his work on living and freshly killed animals.

often impossible to determine which was most effective. In practically all of these cases there was evidence of pharyngitis and this placed probably eighty per cent. of all of these cases into the group of "catarrhal deafness."

The terms "good results" and "partial results," as used above, are purely relative. When the progress of the affection seemed to be completey arrested and there was some improvement in hearing, as shown by the watch test, I have termed it a "partial result." When in addition to this, there was marked improvement in the distance of hearing and the patient's hearing for voice sounds was materially increased, I have termed it a "good result."

Goddard Building.

TREATMENT OF DEAFNESS

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A LITTLE over three years ago I began working upon this very absorbing subject. I have written very little because I wished to wait until the results should be such that my writings would be of some permanent value. Of the present methods of treating deafness, we must all agree, none is proving very efficient. Therefore, a method which offers hope of checking the condition in practically every case and considerably improvement in most of them, certainly deserves to be brought to the attention of those suffering with this malady before their condition has gone too far to be cured.

I propose to give somewhat in detail my method of procedure in these cases, aside from attention to spinal conditions, which, of course, must be corrected to get permament results. Necessarily in covering this ground I shall repeat some things my readers already know.

When a case of deafness comes to my office, I usually first notice how well my own voice is heard in ordinary conversation and questioning to get a preliminary idea of the degree of deafness to voice sounds. I look closely at the general shape of the face, examining for any scars, especially about the mastoid process or external auditory meatus. I watch for the contracted sunken look about the nose so often associated with adenoids and mouth breathing. I notice sounds of the voice closely for evidence of obstructed nasal passages. Next I inquire into the history of the onset of the deafness and all illnesses closely preceding it and that have occurred since, all of which has a bearing upon the prognosis in the case. I look into the present health and habits, regulating the diet to secure good elimination and in each individual case prescribing what seems best to raise physical resistance to the highest point.

After the preliminary examination and questioning, I examine carefully the external auditory canal with a head mirror to note the condition of the drum and surrounding structures. This is very important, as I have found several cases where accumulation of wax had caused a part or all of the deafness. I would like to mention here that I believe blocking of the external auditory canal may result in a congestion and thickening of the drums, as well as obstruction of the Eustachian tube. In these cases, if long enough standing, measures must be taken to free the drum and ossicles the same as if the trouble were catarrhal. Following this, I use the usual tests described in any book on otology, to determine the type and degree of deafness.

I next examine, also with the head mirror and speculum, the nasal passages, noting any bony enlargements obstructing the passages or signs of congestion or hypertrophied turbinates. If there are bony growths, I have them removed. A deviated septum may be straightened either by Edwards' method with the finger or a surgical operation. If the turbinates are hypertrophied, I am inclined to depend entirely upon osteopathic treatment to nominalize the circulation and obtain a free nerve supply and good drainage. This, I believe, will give more permanent relief than any of the other numerous methods commonly used. For conditions of the throat, as enlarged tonsils or congestion, I use cervical and local treatment inside and out to get free drainage and normal salt solution

for cleansing. When I have finished this part of my examination and taken suitable measures to combat any trouble found, I examine back of the soft palate for any proliferation of adenoid tissue, in the manner described in a previous paper by me on this subject. I will reiterate this very briefly. I instruct the patient to draw a deep breath and blow it out as if he were trying to blow straight up through the top of the head, at the same time opening the mouth widely; I introduce my index finger quickly at the side of the uvula and up and forward behind the soft palate. I find this, if done quickly, can be accomplished with no discomfort to the patient, and if quick pressure is then brought to bear upon the surface to be examined, there is no tendency to gagging.

In the removal of adenoid tissue, if this is found, I proceed as follows: With the soft cushion of my index finger I make a swiping movement over the mass, exerting pressure upon the finger. From three to six of these treatments will clear the naso-pharynx in any case of these obstructions or pus pockets, with very little pain and scarcely any bleeding. I personally prefer this method for removing adenoids in all cases, to any other I have ever seen.

I never work back of the soft palate oftener than once a week, as I believe too much irritation may be set up. I seldom open the Eustachian tube more frequently than once in two weeks.

Of course, all this talk about the impossibility of opening the Eustachian tube, has ceased by this time as there can be no question that the tip of the finger, unless it be too large, can be inserted nearly one-half an inch in almost every case. Here the man with the small finger has an advantage. In all of my experience, and I believe I have given this treatment several thousand times, I have never found but one or two people under fifty years of age where the Eustachian tube was too indurated to open. Of course, this is due to the fact that the cartilage is only found on a part of the circumference and the remainder is membraneous.

In all of this work of opening the tube and clearing the naso-pharynx, speed and technique are most important. I seldom have my finger in the throat more than ten seconds for the entire operation, practically never have a patient gag and never have had one nauseated to my knowledge. After considerable practice, one can work so quickly and surely that the operation is almost painless, though, of course, nervous patients are frequently slightly exhausted after the ordeal. I use my left index finger for the left tube and right finger for the right tube, and usually can open both at the same visit if necessary.

As for the technique of the tube operation, it consists simply in straight pressure outward, upward and backward into the orifice, internal rotation and a slight traction downward and backward in removing the finger. Some patients hear more clearly immediately after this operation; some see no change, and occasionally one does not hear so well. Very often the improvement, though marked, is only temporary. I have found this in cases of central deafness, where I was unable to get much permanent result. However, it often has very little bearing on the result. I believe the shock of the operation, together with the forcing of some air into the middle ear, may cause a tensing of a relaxed or atrophied drum in some cases, thus giving this temporary result, where it may take some time to tone up these tissues and get any permanent relief.

I find that the cases in which there is the most adenoid growth and other signs of congestion often show the quickest result, whereas, if there is an atrophic condition and considerable induration of the tube, the same condition may prevail in the drum and middle ear and be slow to respond.

I use great care in cleansing my finger before the operation and spray twenty to thirty per cent. alcohol solution into the naso-pharynx before operating. Normal salt solution I believe as good as anything for the patient to use after the operation, though I often do not use that. I have never yet had a case of middle ear infection follow my work.

As for result, I think in cases not of the central type nearly all may be benefited, many cured, if the condition has not been of too long a standing and the middle ear can be restored to activity. As for cases of central deafness, I have benefited several and cured one or two. I do not think it is wise to refuse these cases without a trial.

In the outside treatment, I use one or two methods I have not seen mentioned elsewhere. To free the ossicles and stretch the drum, I place the flat surface of my palms against the ears and cause alternate pressure and relaxation. The suction may be felt in the ears very plainly, especially after the tube is opened. On account of the close connection of the ligaments of the jaw to the external auditory canal, closing the mouth against pressure or tensing voluntarily the muscles of the jaw in closing the mouth are helpful to restore normal circulation.

In closing this paper, I would like to say this: We have only commenced in this work and do not yet begin to know all about such a complicated subject. It requires considerable practice to become adept in this technique and cause the least discomfort to the patient, as well as a minimum of trauma to these extremely sensitive tissues. However, I believe all osteopathic physicians who can spend the time, should learn how to treat these cases, as it will need a coalition of many minds to bring this treatment to perfection. Each individual effort and experience helps to increase the general store of knowledge and may fill in the missing link for someone. While I had been opening the Eustachian tube for about two years before I knew anyone else was working on the same lines, I make no claim to priority of discovery, as I believe we are each simply doing our little part toward the perfection of a great science.

CASE 1

Miss A.—Age 35, occupation book-keeper.

History—Deafness came on gradually, beginning about ten years ago. Considerable roaring in head and subject to catarrhal colds. Worked long hours and very hard.

Examination—Both ears affected. Watch heard one inch from right ear, two inches from left. Bone conduction fair over mastoid and frontal bone; not heard on vertex of skull or in front of nostril. Naso-pharyngeal examination showed trophic indurated condition about right Eustachian orifice and no soft tissue. Fossa of Rosenmüller on left side filled with adhesions and adenoid tissue. After four weeks' treatment opened right tube. Watch heard eight inches away immediately. Two weeks later left tube opened with less immediate response. After three months' treatment hearing in left ear nearly normal. Right ear responding more slowly but greatly improved.

CASE 2

Mrs. T.—Age 48, married.

History—About two years ago was taken with sharp pain under left ear followed by stiffness in muscles of left side of face and deafness in left ear. Stiffness gradually left face, but deafness remained and grew steadily worse, until conversation in ordinary pitch of voice was not heard on that side. One year later other side became affected in similar manner.

Examination showed no bone conduction of sound on either side. Watch not heard at all at left ear; about two and one-half inches from right ear.

Treatment, consisting of thorough adjustment of neck and all other spinal lesions with relaxation of super-hyoid muscles and ligaments about the angle of the jaw and dilation of Eustachian tube, resulted in practically perfect hearing for voice sounds in about three months. Examination eighteen months later showed no return of trouble.

CASE 3

Miss C.—Age 26, stenographer.

History—Started with grip two years ago and grew rapidly worse, making work very difficult. Very subject to catarrhal colds and facial neuralgia.

Examination—Watch heard about two inches from left ear and three inches from right. Bone conduction good. Great amount of adhesions and adenoid tissue about both tubes, even the mouth of the tubes being partly filled with soft tissue.

Treatment twice a week for five weeks, removing adenoid tissue and clearing adhesions about tubes. Considerable discharge from naso-pharynx followed each local treatment for two or three days. After five weeks of the treatment both tubes opened and in three months hearing was practically normal. Tubes were opened at intervals of two weeks.

15 Exchange Place.

THE BODY'S DEFENSIVE MECHANISM

W. B. Goodfellow, D. O.,
Los Angeles, Calif.

DR. STILL has become immortal by emphasizing the true philosophy of the reaction of the body to disease. Physicians of all schools now admit, by their actions if not by their words, that their chief dependence in the cure of disease is in the forces within the body rather than in any extraneous substance which may be introduced into the body. Nature has planted within the body a mechanism for the cure of disease that is challenging the admiration of the physicians of all schools. Osteopathy has always insisted that within the body itself were to be found the agents necessary for the cure of disease.

Truth has been unfolded to the minds of men but slowly. Men treated disease for centuries before even knowing of the circulation of the blood, and they had known of the circulation of the blood for centuries before they have at last come to a realization of the importance of the fluids of the body in overcoming disease. Hence physicians of today are admitting by their actions, if not by their words, that their chief dependence in the cure of disease is the forces within the body.

But a nature that has planted so benign an agency as we have just mentioned within the body for the destruction of disease-germs after their entrance into the body and for the healing of the defect in the tissues produced by their attack has not overlooked the necessity of an agency for preventing their entrance into the body. Indeed, I believe that the evidence will substantiate the belief that nature puts as much, if not more, dependence upon the mechanisms for preventing the entrance into the body of these organisms as it does into the mechanism for fighting them after they have gained entrance.

Consider, for instance, the skin, the surface and outer layers of which, are teeming with disease producing organisms and yet so resistant to the invasion of these organisms that we do not consider this a menace to our well being unless it becomes necessary to sever the continuity of that skin and then see what pains are taken not only to cleanse the surface and outer layers of the skin, but to prevent contact with anything not sterile. I say that perfect health of tissue is not a guarantee against disease, as stated by so many osteopathic physicians, but that the maintenance of the perfect health of the defenses of the body against the invasion of organisms is a guarantee against disease. The skin, then, is one of the well nigh impenetrable barriers erected by nature to prevent the entrance of disease-producing organisms. The upper and lower orifices of the body are the only break in the continuity of this barrier excepting the eyes.

Of the diseases arising from the entrance of bacteria into the lower orifices and of nature's defenses in these orifices I do not wish to speak. That these diseases have received a greater amount of study at the hands of most of our osteopathic physicians than the diseases of the upper orifices, I believe no one will question. After eliminating the diseases peculiar to the lower orifices and the few where the infecting agent penetrates the skin, the upper orifices are left as the only avenue of entrance for the organisms producing the larger number of systemic diseases of bacterial origin.

Looking at the subject in this light, the upper orifices become of very great interest to us as general practitioners. Infecting organisms are carried into these orifices mainly in two ways, with the food we eat or in the air we breath. A great deal has been accomplished to rid our food of those infective organisms which produce disturbances peculiar to the digestive track. This work has necessarily consisted of purifying water and milk supplies compelling the proper handling of food supplies, "swatting the fly," etc. I say it necessarily consisted of these efforts because there is no mechanism in the mouth or esophagus for the purifying of food or screening it from bacteria. Because of the good results of these endeavors men have gone about the prevention of diseases arising from germs inhaled in much the same way by endeavoring to destroy the bacteria in the air we

breathe. That this is commendable is obvious, but nature seems to have been aware of some of the limitations of humanity in this respect, and while it would be ideal to live in an atmosphere freed from all disease-producing organisms such a condition can hardly be expected to be brought about. Nature, I say, seems to have been aware of these conditions and has placed the mechanism in the upper air passages for the screening of impurities from the air, thus saving the tissues the necessity of constantly reacting to the invasion of disease-producing organisms. It is the importance of this mechanism in the prevention of systemic diseases that I desire to impress upon you. It may be the neglect of disorders of the upper orifices that accounts for the fact that tuberculosis, pneumonia, asthma and bronchitis take their regular yearly toll in suffering and death.

It is a fact that in an hour's tranquil breathing, about fifteen hundred bacteria are inhaled. It no doubt is not an unusual thing for thirty or forty thousand bacteria to enter the nose in an hour under certain conditions. If it were not for the protective mechanism provided by nature to screen these organisms out of the air, the body would be in a state of disease most of the time; that is, it would be necessary for the system to be constantly attacking these bacteria and repairing the damage done by them.

It is no doubt a fact that every one of us, and particularly those living in large cities, breathes air impregnated with virulent bacteria and escapes disease not because the tissues successfully antagonize these invaders, but because these invaders never reach the tissues where a reaction on the part of the tissues is necessary. They are arrested in the nose and expelled by the blowing of the nose, by coughing or sneezing. In a normal nose, the anterior one-third is teeming with bacteria. The middle one-third has but a few bacteria in it, and the posterior one-third is a sterile area. In a normal nose, then, of the hords of bacteria inhaled during the day, but few penetrate as far as the middle of the nose, and none into the posterior nares or to the larynx, bronchial tubes or lungs. It seems that nature prefers to establish defenses that will discourage the foe and hold them outside the body rather than to all free entrance and be constantly engaged in a hand to hand conflict with them.

It is but the accident of wrong location that spells the difference between a streptococcus in the anterior nares doing no harm and that same organism in the maxillary antrum producing pus and setting up a violent inflammatory reaction, nature's method of riding herself of the invader. It is only the accident of wrong location that spells the difference between a pneumococcus in the anterior nares doing no harm and that same pneumococcus, finding some of the defenses down, traversing the Eustachian tube, lodging in the middle ear, there multiplying and exciting the reaction in the tissues which effectually seals up the Eustachian tube and makes it a fight to the death between the bacteria and the tissues. It always results in the death of a great deal of tissue including enough of the ear drum to allow the escape of the debris of battle, and usually terminates in a guerilla warfare being kept up between a few surviving bacteria and the weakened tissue cells. Let me repeat that the good health of the tissue cells is no guarantee against disease, it may be a guarantee of the disease resulting favorably; but the only guarantee that we have that disease will not arise is that the disease-producing organism be not allowed to gain access to the tissues. Hence the great importance of the intactness of these natural defenses in the upper air passages.

The nose is so made that it divides the air current into several narrow channels, and the whole interior of the nose is lined by mucous membrane that has the function of secreting mucus. This mucus collects the dust and bacteria from the air and is the chief agent in keeping the bacteria in the front of the nose. Any obstruction to the gravitation of the mucus to the lower and front part of the nose interferes with this mechanism. In blowing the nose the mucus is expelled violently into the handkerchief carrying foreign material with it.

The act of sneezing accomplishes the same end. It is nature's method of cleansing the nose. In case any bacteria or foreign particles are irritating to the delicate mucous membrane immediately an excess of mucus is secreted, and we call it a cold in the head. It is nature's method of getting rid of the invader.

Now, what is nasal catarrh? Some people are not able to expel the secretions from the nose successfully, but snuff them back into the throat and expectorate them. This is an evidence that nature's protective mechanism is out of order, and that infective organisms are not being held in the anterior nares but the secretions that should be watery in character and should wash out the nose, have been retained in some part of the nose until they have become stringy and tenacious and can only be dislodged by snuffing them back into the throat and expectorating them.

This procedure endangers the system, as the bacteria in these secretions are brought into contact with the pharyngeal orifices of the Eustachian tubes and into the larynx and frequently into the bronchial tubes. In other words, the disturbance in the proper drainage of the mucus in the nose has changed that mucus into a vehicle which carries the infective organisms, which should be confined to the anterior nares, to the orifices of the Eustachian tubes and into the lower air passages. It is a well known fact that patients suffering with nasal catarrh very frequently have ear trouble, so called "catarrhal deafness," laryngitis and bronchitis. Catarrh, then, is a change in the character and quantity of the mucus secreted by the nose, and this change in the mucus is caused by an obstruction to the free drainage of the mucus. In other words, some portion of the nose being blocked, the mucus is retained until it becomes thick and heavy and is infected and irritating. After accumulating to a sufficient amount it is dislodged usually on the ingoing air current. Now nature's wall of defense is down, and henceforth it becomes a hand to hand conflict between the bacteria and the tissue cells. The mucus which should have been the most important factor in preventing the entrance of infection now becomes a vehicle for carrying the infection to the tissues.

But what has this to do with sinus involvement? A very great deal. A general understanding of the physiology of the secretions of the nares and the necessity for their free and uninterrupted drainage is essential before sinus involvement can be understood. It will not be necessary for me to enter into the minute anatomy and physiology of the sinuses to discuss intelligibly this subject, for we can consider the sinuses, the maxillary antrum, the frontal sinus, the ethmoid cells and the sphenoid sinus as portions of the nasal chambers lined by a mucous membrane which secretes mucus which is constantly moving towards the orifices of the nose. These sinuses are normally sterile and are subject to disease exactly as the nasal chambers are by an interruption of the free drainage of their secretions. Where this interruption of the drainage of the secretions from the sinuses is not accompanied by an infection it is known as simple closed empyemia. This type of sinus involvement is met with in acute fevers, colds, etc. The patient complains of soreness and pain over the malar bones or severe frontal headache lasting for a few hours or days and disappearing upon the disappearance of the turgesence of the mucous membrane of the nose. In this type we have a blocking of the flow of the secretions from the sinus with pain from pressure.

Introducing now the element of infection into these pent up secretions and we have a different clinical picture. Different principally in the greater prostration of the patient with all of the evidences of toxic absorption coupled with greater pain usually localized to the side involved and ordinarily diagnosed as an accompanying neuraliga. If the reacting power of the tissues is good, drainage may soon be effected, the infecting organisms expelled, the tissues rebuilt, and the parts returned quite to the normal. This happy outcome rarely takes place, however. Usually in these cases the patient is unable to throw the cold off and suffers with pain and

more or less general malaise for two or three weeks. Finally, however, the fever and pain subside and the case is discharged.

These are the cases that "take cold easily," where the "slightest draught starts that old neuralgia." The pathology in the case is simply this: Nature is waging a constant hand to hand conflict with the streptococcus or pneumococcus, or influenza bacillus, or all three of these in that sinus, and when the tissues have succeeded in attenuating the bacteria to a sufficient degree the toxic absorption is lessened, the tissues are rebuilt, the symptoms subside and nature has time to manufacture some energy other than that needed to combat these invading organisms. Now the patient feels well and goes about his daily duties as usual.

A slight draught, however, or over fatigue will change the vaso-motors enough to bring about what Ballanger calls a vaso-motor imbalance. This vaso-motor imbalance changes the circulation to the nasal mucous membrane enough to alter the drainage and the nutrition of the cells and the bacteria, quick to take any advantage, renew the attack during the time that nature is handicapped in making a resistance, and now the same old battle is fought over again. With each succeeding attack a general thickening or hypertrophy of the tissues takes place. This hypertrophy inside the nares further interferes with the proper drainage of the secretions. This process goes on month after month and year after year until the system gains some immunity to the organisms, so that the tissues are unable to bring about a violent inflammatory reaction to repulse the invaders.

This is usually the condition of the patient of chronic nasal catarrh of years standing, so familiar to us all. He wonders and you wonder where all the secretions can come from. The sinuses are the reservoirs. In antrum involvement, the patient is not greatly annoyed by the secretions after getting the throat cleared in the morning until late in the afternoon or night. Then he has to arise and clear his throat frequently, or where the quantity of secretion is not so great it lodged in his posterior nares and throat during the night and necessitates violent efforts to dislodge it in the morning. The reason for this nightly drainage is that the opening into the nose from the antrum is above the inferior turbinal bone and high up on the inner wall of the antrum, not affording free drainage while the patient is in an upright position. While he is upright the sinus fills, and empties when the patient resumes the recumbent position.

In frontal sinus involvement, the picture is different. Here the fronto-nasal duct is located in the lower anterior portion of the sinus and affords good drainage while the patient is standing but the sinus fills while the patient is lying down. In these cases, then, the patient is not bothered by the secretions while lying down, but immediately upon arising the stream of purulent secretions begins. During the forenoon the patient is kept busy with his handkerchief, and if the drainage is free the sinus clears itself by noon or thereabouts and the afternoon is spent in comparative comfort. In those cases where the interruption to drainage is so great as to amount to an extreme blocking of drainage from the sinus at all times, the above cycles of drainage do not take place, but the patient has almost constant distress from pent up secretions with a continuous flow of the secretions day and night.

Now, what can the osteopathic physician accomplish in these conditions? Will the re-establishment of normal nerve and blood supply to these parts bring about a cure? These are important questions, as it is generally published in literature and from the lips of our osteopathic physicians that "osteopathy is good for catarrh." To be on safe ground it is essential to make an accurate diagnosis of the amount of pathological change that has taken place in the nares and to what extent a normal blood and nerve supply will be able to restore conditions to normal. We must recognize the fact that the interruption of drainage is caused, in the first place in a good many cases, by a deviated septum result of injury or congenital malformation, or to spurs or ridges on the septum, or to an ethmoid cell in the

middle turbinal bone. In such cases, at least, the obstruction to drainage will not be corrected by restoring normal blood and nerve supply to the parts by manipulative treatment. So it will be conceded by all, I think, that where an intra-nasal obstruction exists, which can not be materially changed by normalizing the blood and nerve supply by manipulative treatment, some other form of treatment should be used. But the finding of such a lesion necessitates an inspection of the interior of the nose.

If this could not be successfully done by the general practitioner, I would hesitate to mention the necessity of it to you. I believe that the properly equipped physician in general practice today should be able to make a satisfactory examination of the interior of the nose to the extent of determining with a fair degree of accuracy whether or not manipulative treatment will accomplish the desired results. A dark corner, a good light, a head mirror, a nasal speculum, a post-nasal mirror, a cotton applicator, and some adrenalin are all the necessities for making such an examination. Total expense of the outfit is about $6.00 or $7.00.

For simplicity we can divide the cases into three classes. First, those having no predisposing intra-nasal obstruction but where bacterial action has set up an inflammatory zone with impaired drainage from the sinuses. Second, those where the recurrence of this bacterial action at frequent intervals has produced over-cell nutrition with hypertrophy and permanent interference with drainage. Third, those cases having bony or cartilaginous obstructions in the nose interfering with drainage. Of these three classes of cases, the first class is the one in which osteopathy has scored some brilliant successes. The restoration to normal of the circulation not only opens up the stuffy nose and relieves the congested head, and thus gives the patient relief, but it actually aids nature in expelling the invading organisms and frequently "cures a cold in twenty-four hours."

In the second class of cases, where recurrence of acute infections has brought about hypertrophies, a great deal can be accomplished. In correcting cervical and upper dorsal lesions, constipated bowels and bad stomachs, the pre-disposition to take cold is done away with in some cases and the hypertrophy stopped. In some of these cases, however, the hyperthrophy has become the obstructive lesion and needs to be treated surgically before the susceptibility to "cold" is overcome and normal drainage re-established.

In the last class, where bony or cartilaginous obstructions cause the trouble, nothing but surgery will give good results. The lesion is inside the nose and must be removed. Nothing less than a perfectly drained nose will accomplish the function of preventing the entrance of infective organisms into the system. The question of whether the patient breathes well through his nose or not is not a good guide as to whether or not the nasal chambers are properly drained. Nothing but a thorough intra-nasal examination will determine the existence of abnormalities interfering with this important function. Usually if the interruption to drainage is severe enough to annoy the patient so that he seeks relief of a physician the case is so far advanced that nothing but surgical measures will give the desired results. It is before this condition has been reached that osteopathic treatment will get its results and save the necessity of future operations.

Considering these upper air spaces, then, as one of nature's important walls of defense to the invasion of the system by disease-producing organisms in every case coming into our hands, I believe it is our duty to make a careful inspection of these parts. To stop the flow of these hords of bacteria into the system will simplify the battle with those already entered. In the light of recent investigations which indicate that cancer is an infection to be prevented and possibly cured by the normal activity of the lymphoid tissue of the body, the consideration of this subject takes on added importance.

The defenses of the system to bacterial invasions of childhood are largely lymphoid in character, a part of which is the well known Waldyer ring. The Waldyer ring,

including tonsils and pharyngeal tonsil, atrophies between the ages of puberty and adult life, or at the time of the development of the nasal chambers into adult size when they assume the function of the defence of the system against invasion by bacteria. Where the invading hosts of bacteria overcome these defensive mechanisms, either in childhood or adult life, it has been observed that they find their way into the lymphatic chain as is evidenced by inflammatory reactions and hypertrophies of these structures. In cases where nature's defensive mechanism in the upper air passages is disordered and bacteria are finding their way into the lower air passages and the lymphatic system, may these lymphatics not be injured enough to allow of the growth of cancers at some point in the body? Is it not, then, the part of wisdom for us to consider of the greatest importance this mechanism of nature for preventing the entrance of disease-producing organisms into the system.

One more thought aside from the subject: The same investigators have proven that any irritation to tissue cells positively favors the production of cancer. Is not this positively a contra-indication to drug medication?

FERGUSON BLD.

"THE ART OF ADJUSTMENT"

WARREN B. MACK, D. O.,
Lynn, Mass.

My object in coming before you is not to attempt to teach you spinal mechanics, because most of you could teach me much about this subject; but I wish to offer certain suggestions for your consideration and to discuss a subject in which I am intensely interested, the subject is called "osteopathic technique."

It is my impression that most of us pass through several phases of development before we become capable practitioners. The stage I have reached in this year of 1915 is a very firm belief in the existence of specific bony lesions, also a belief that I have a great deal to learn about the correction of them.

Read at annual meeting of Massachusetts Osteopathic Society, January 2, 1915.

After a careful study of the A. O. A. JOURNALS and comparing the issues of 1914 with those of 1907 and 1908, it appears that we have had, and are now having, a revival of technique that has swept over the whole country. The profession, as a whole, has apparently awakened to the fact that this is the all important subject to us, and while other branches of medicine are of importance they are, after all, not as necessary to us as the real essence of the science, the part in which the public expects us to be proficient; general medical knowledge is a necessity to every one of us, but, to perfect ourselves in the one thing which makes us different, and I hope superior to any known school of medicine, is our only hope and salvation. Skill in the use of our hands, finding minute misplacements and adjusting them, and a very profound knowledge of anatomy, are some of the things of which we are very proud.

We tell the public we are clever at these things, we speak about our highly developed tactile sense, and, take it all in all, set a very high standard for ourselves, which is commendable; but how near do we come to this high standard? Probably not as near to it as we think and not as near as is possible if we make the most of our opportunities. Opportunities await us at every turn, but they are so numerous we undoubtedly overlook many of them each day.

I have often wondered how many of us make a serious and exhaustive study of each lesion we attempt to correct and how many make a daily study of anatomy, physiology, pathology and spinal mechanics; tracing each nerve and blood vessel from the part in lesion to the organ affected. In a word, using every opportunity and striving in every conceivable way to attain the perfect technique of the honorable and respected founder of osteopathy, Dr. Andrew Taylor Still.

Is it not possible that the rapid growth of osteopathy has had a tendency to make us a little self-satisfied with our present knowledge? This satisfied feeling probably was prevalent up to a few years ago, but cer-

tainly is not during the past two years. One has but to read the A. O. A. JOURNAL of 1913 and 1914 to convince himself that the profession as a whole is far from satisfield with its knowledge of spinal mechanics and technique.

I am inclined to believe that the marked success of osteopathy is not attributable so much to our superior skill as it is to the fact that the principle of osteopathy is right and even a crude attempt at correction, if the force is applied in the right direction, is beneficial. This is proven by the fact that the various "cults" and "pathies" who imitate osteopathy in a raw and unrefined way, apparently secure results, on cases formerly treated by drugs. Our policy should be to develop our knowledge of spinal mechanics and technique to such an extent that it would be utterly impossible for any ambitious imitator to even approach our state of perfection. This ideal can only be attained by concentrating most of our energies in one direction.

Manipulation of the human body is as much an art as the painting of a picture, and is surely a much more serious proposition. It seems to me that we should consider the method of adjustment of an individual vertebra, of as much importance as the method of reducing a dislocation of the hip or shoulder. I also believe that the pathology of the bony lesion ought to receive as much careful thought as the pathology of gastritis or any other "itis."

The more I study technique the more I am impressed with the vast importance of it and with the fact of how difficult an art it is to acquire. It is a subject brim full of interesting features that furnish plenty of food for thought and offer many hard problems which are difficult to solve. Its possibilities for study and for private research work are many and varied; motion study, leverages, placing of our hands so that the patient experiences a feeling of confidence in our ability, studying reactions from treatment and many other little points of refinement, which if worked out in detail would prove to be of great value to us and of greater value to our patients.

What a wonderful thing it is to be able to relieve human suffering with the hands alone; simply using proper leverage applied in the right direction. On the other hand, how easy it is to drift into the general treatment habit, crack the neck, snap the back, tickle the liver and massage the abdomen, at the same time carrying on an interesting discussion of the European war or some other vital subject. Some call this melange, "osteopathic technique," but the majority do not. When Doctor Still invented osteopathy he probably did not have a procedure such as the above in mind.

In the past and to some extent at the present, a certain element in the profession has shown a tendency toward laying more stress on the study of drugs and other procedures than on the study of osteopathy; some few go so far as to suppress the word "osteopath" on their cards, letter heads and signs and substitute the word "Doctor." For sentimental, social and commercial reasons I would much prefer to cease calling myself a doctor than to cease calling myself an osteopath. This so-called broadening by the study of drugs and other forms of treatment and neglecting to perfect our technique, tends to start us on a long, rapid and easy slide toward oblivion, instead of a gradual and hard climb toward the highest pinnacle of success. No one person can monopolize all medical knowledge and, while it is convenient to have a liberal fund of general information, it is more to the point for us to know our own work first.

The manipulative part of medicine is the part the public expects and demands us to know and to know thoroughly, regardless of how many side issues we may have to offer. I firmly believe the time is coming and it is almost here, when people will go to an osteopath not because he owns a hot air machine, high frequency apparatus or has a smattering of drug therapeutics, but because he or she has a remarkably high efficiency in adjusting lesions and because this person does it, not in a brutal manner, but smoothly, easily and with the least degree of discomfort or pain to the patient; in other words, in an artistic manner. People are beginning to understand that there are as many kinds of osteopaths as

there are varieties of breakfast foods, so let us have a care that we are not classed as mixo-paths, myo-paths, semio-paths or smash-o-paths but as genuine dyed-in-the-wool, scientific and artistic osteopaths.

180 Lewis St.

CAMPAIGN BULLETINS, GRADUATE CLINIC

C. M. T. Hulett, D. O., *Mgr.*,
Chicago.

The Old Doctor has always had a warm place in his heart for the Research Institute. It will be recalled that when Dr. Hildreth went to him to ask what he would most like to have from his "boys and girls" as a birthday remembrance on his eighty-fifth anniversary, he said that if they wanted to give something to remember his birthday they could give it to the Research Institute. Just this Christmas one of his "girls" sent him a check and he forwarded it to the Institute as his preferred disposition of it. We ought to exert ourselves to give him the satisfaction of seeing this institution firmly established in his lifetime.

Endowment campaigns and holidays do not go well together. With the added effect of business depression we could only mark time during the last two months. The cities are not in business condition for this work, but with big crops, big demand, and big prices, the farming sections are much better off, so we need not lose this whole year, but will take the campaign into the wheat and corn belts while big business is recovering from its shock.

The Research Department has accumulater records of about forty series of experiments since Bulletin No. 1 was issued. These should be in the hands of the profession. Every osteopathic physician should have in his library the complete records of osteopathic research as they shall be issued from time to time by the Institute. The administration department will have the present records printed if the profession will indicate its desire for them. They will probably comprise Bulletins Nos. 2, 3 and 4. We have no estimate yet on cost, but the policy of the Institute in the matter of prices will be to charge only a small margin above cost.

One of these bulletins will be devoted to the ear, nose and throat, including the subject of catarrhal deafness. Drs. Deason, Edwards, Granberry, and Millard have collaborated on this with a view to covering the subject exhaustively. It will give methods of diagnosis with special reference to differentiation and to contra-indications; description of technique and illustrations from original drawings by Dr. Millard and skiagraphs by Dr. Collins of the research staff, of the structures involved, including bismuth injected Eustachian tube. The other bulletins will include work by Drs. McConnell and Burns in the last three years as well as that done here in the Institute. It is not necessary to ask the profession for binding subscriptions for the bulletins, but it would help greatly in deciding the number to have printed to have some idea of the present demand. Will every physician who would like to have them drop a line to the Institute to that effect?

There are in the making for a four weeks' course of lectures, demonstrations and clinics at the Institute in April next, and this preliminary notice is to call attention to fuller announcements next month. The Council has elected Dr. Burns as Dean of the Education Department and the work will be under her direction.

The evolution of osteopathic education has defined this field for the Institute, and at the conference of the A. O. A., the colleges, and the Institute at Philadelphia last summer, the last points of uncertainty were cleared away.

The educational time standard is now four years, so that all work under four years may be regarded as undergraduate work, belonging to the colleges. The Institute cannot give time credit that would be accepted by state boards, so a two or three years graduate wanting additional time credit must of necessity go to a college for it.

The educational work of the Institute will be in the form of distinct courses on separate subjects, beyond the college course, tending to specialization, and con-

necting up with the research work of the Institute.

The clinical element will be emphasized always. Unlimited clinical material is available any time we want it, and actual diagnosis, case taking, and technique will be the backbone of the course in every subject. The size of the classes will be limited to the number that can be given individual attention by the instructor. The character of this work is best named by the term Graduate Clinic, which will be the title of this Bureau of the Education Department.

The possibilities of this work are stupendous. There is no apparent reason why we should not in time develop here an osteopathic Vienna, with a great, permanent, and continuous clinic, to which osteopathic physicians might come at any time and stay as long as they desire, with special lecture and hospital courses and demonstrations at stated times.

With the educational work of the Institute developed along these lines there will be less reason for osteopathic physicians going to medical colleges and clinics for advanced work. When they can get this advanced work without having to give it the osteopathic recast themselves, in doing which some of the osteopathy is too often lost, there will be less of the mixing which is now sometimes in evidence, and osteopathic practice will be more uniformly osteopathic.

The first work given by the Graduate Clinic Bureau of the Education Department will be offered April 5-30, 1915.

The following course is offered:

1. General clinics, illustrating exact methods of diagnosis and treatment. The best modern X-ray and laboratory methods will be employed.

2. Special course in Ear, Nose and Throat. Dr. Deason in charge.

3. Special course in Functional Nervous Diseases. Dr. Burns in charge.

Enrollment for the course will be limited to thirty-two. The tuition is $50.00. Those taking advantage of this work are expected to own the apparatus required in office practice.

The policy in all the work of the Graduate Clinic as it may develop in the future is that a few subjects shall be treated exhaustively rather than a large number superficially.

Suitable certificates will be given those who complete this course in a satisfactory manner.

For further information address,

LOUISA BURNS, M. S., D. O., D. Sc. O.
Dean of the Educational Department.
The A. T. Still Research Institute,
122 S. Ashland Blvd., Chicago, Ill.

TRANSPORTATION ANNOUNCEMENT

The date for our annual convention, which will be held in Portland, Ore.—the City of Roses—is August 1, and it has seemed desirable, because of the large movement of passengers to the Pacific Coast during the coming summer, in connection with the fairs at San Francisco and San Diego, that an early determination should be reached with reference to the route of our special trains from Chicago.

After going over the ground carefully with respect to the service and attractiveness of the route, we have concluded that our interests will be best subserved by arranging for a through train over the Chicago, Great Western Railroad from Chicago to St. Paul, and by the Great Northern Railway from St. Paul to Minneapolis, through the Lake Park regions of Minnesota, the boundless prairies of North Dakota and Eastern Montana, stopping a day for rest and side excursion in Glacier National Park, in the Rocky Mountains, thence through Kootena Valley to Spokane, and on to and over the Cascade Mountains to Puget Sound, Seattle and Tacoma to Portland.

The time for which we have planned will consume about four days from Chicago to Portland. .

Our national president and most of the trustees and members of important committees will be on this train, and we are anxious that they shall have a large and representative escort.

The members of our Association east of Chicago are cordially invited to join the special train at Chicago, while those west of the territory that cannot conveniently route through Chicago, could join the train at St. Paul, or some other convenient point.

In view of the heavy travel of next summer above referred to, it is very desirable that an early determination to attend the annual meeting and join this party should be reached, so that sleeping car and other arrangements can be made to the best advantage.

Special advertising matter will be issued in regard to the trip and mailed to members at as early a date as possible. In the meantime, we hope that you will give the subject consideration and respond promptly with request for reservations as soon as the necessary blanks reach you. Let us all join hands to make the 1915 convention the banner meeting of the American Osteopath Association.

E. J. Pratt, D. O.,
Chairman of the Transportation Committee.
Goodard Bldg., Chicago.

RELATION OF FUNCTION TO STRUCTURE

(Continued from page 220)

more fatal than the opposite. Alkali is constantly being used up to neutralize the acid products of metabolism, chiefly carbon dioxide.

Loeb considers sea water[B] a practically neutral solution, and hence ascribes the favoring action of alkalies upon cell division and growth to the neutralizing effect of the alkali added upon acid products formed by the cells in the process of growth, which would otherwise cause an accumulation of acid ions and arrest the development, and Friedenthal,[C] Fraenkel[D] and Farkis[E] have shown that normal blood plasma possesses no higher concentration in hydroxyl ions than distilled water; however, a solution of mixed phosphates and carbonates, in which there is an approximate balance between the concentration of acid and hydroxyl ions (as in normal blood plasma and sea water), cannot be regarded as neutral in the same sense as distilled water is neutral; or as being acid or alkaline in the same sense as a solution containing only free acid, or free alkali can be regarded as being acid or alkaline; nor will such a solution of phosphates and carbonates have a similar action upon living cells to either distilled water or a neutral solution of such salts as sodium chloride of equal osmotic concentration.

Such solutions form a peculiar type of their own which possess the property of behaving either as an acid or as a base to any substance possessing weak acid or basic properties brought into the same solution, and they prevent such a substance from materially altering the relative concentration of acid and hydroxyl ions, although they would cause an enormous variation if added to distilled water. Therefore, blood plasma, and to a less extent sea water, possess a steadying action upon variations in the concentration of acid and hydroyl ions, and when acid or alkali is added to the plasma, instead of a corresponding swing in the concentration of the acid and hydroxyl ions occurring, there takes place an alteration in the equilibrium of the ions of the phosphates and carbonates which neutralizes, in a great part, the acid or hydroxyl ions added, and prevents the plasma from becoming markedly acid or alkaline. Without such a controlling action the life of the cell would become impossible, for the living cell is most sensitive to even small variations in either acid or hydroxyl ions.

This powerful action of alterations in concentration of acid or hydroxyl ions is due to the fact that the constituents of the protoplasm behave like very weak acids or bases, and are affected by variations in acid or hydroxyl ions in a similar manner to color indicators. Very small variations in ionic concentrations will hence cause the

B. Loeb, Arch. F. Entwickelung-smeckavik d. Organismen, 1898, Vol. 7, page 631.

C. Arch. F. Anat. u. Physiol., Physiol. Abth., 1903, page 550.

D. Arch. F. d. ges Physiol., Vol. 96, 1903, page 601.

E. Arch. F. d. ges Physiol., Vol. 98, 1903, page 551.

constituents of the cell to become almost completely associated or dissociated, and prevent the chemical reactions from occurring which are necessary for the metabolism and life of the cell.

Changes in concentration of the two ions (acid and hydroxyl), not sufficient to produce death, cause marked alterations in both rate of growth and type of cell division. That such changes are present in malignant disease are evident from the lack of acid in the gastric secretion, and Hertwig[F] and Galleotti[G] have shown that quinine, chloral, nicotine, antipyrine, cocaine and potassium iodine will cause similar changes in cell division and growth. Balleotti[G] states that these changes are exactly like those seen in carcinoma. The changes in concentration of acid and basic (hydrogen and hydroxyl) ions sufficient to bring about these results are not great enough to cause any appreciable change in osmotic pressure.

Living passive muscle has an alkaline,[23] or more correctly, an amphoteric reaction, changing red litmus to blue, but acid to taurmeric (this is the same as the normal reaction of blood and lymph). The reaction becomes acid in the active muscle (not the unstriated variety); and indeed the degree of acidity increases to a certain limit in proportion to the amount of work performed. This increase[24] in acidity is due to an accumulation in the tissues of such products of metabolism as phosphoric acid, free or combined in acid salts, acid potassium phosphate and carbon dioxide. These substances bring on the state of fatigue which may be removed by arterial but not venous blood.

The earlier[23] views that this acidity is due to the development of lactic acid from glycogen has not been substantiated. Pflueger and Warner, also Astaschewsky and Heffter, even found the quantity of lactic acid in active muscle reduced as compared with passive muscle. Other investigators still adhere to the theory of lactic acid formation, especially if there is deficiency of oxygen during the work. Lodi[25] contends that a deficiency of oxygen gives rise to increased disintegration of albumenates and increased production of urea and intermediary products; however, it is the acid radical with which we have to deal more than the kind of acid, and all are agreed that there is an increased production of acid during muscular activity. In fact, active muscle excretes many times more carbon dioxide than resting muscle, even out of proportion to the oxygen simultaneously absorbed (as does excised contracting muscle). This excess of oxygen is contained in the muscle in chemical combination.

Under normal conditions, the nitrogenous products of proteid decomposition are excreted slowly, even for two days after the completion of the work, while the carbon dioxide resulting from such decomposition is excreted quickly through the pulmonary respiration, perspiration, etc.; but if the arterial supply[26] or venous drainage to a muscle be interfered with these products accumulate, producing an initial increase of irritability, "The Treppe[27] Phenomena"; after further accumulation the muscle fatigues more rapidly and recovers slowly. It is a general[27] characteristic of living matter that every efficient stimulus applied to it leaves a record, and Howell[28] defines muscular fatigue as a more or less complete loss of irritability and contractility brought on by functional activity.[29] This is even more evident from the fact that fatigue of one set of muscles makes another set less competent, unless sufficient time has been

F. Jenaische Zeitsch. F. Naturwissenschaft, Vol. 20, 1887, pages 120, 477.

G. Breit. z. Path. Anat. u. z. Allgem. Path., Vol. 14, 1893, page 288.

23. Lodi Text Book of Human Physiology, 10th Edit., pages 550-1.

24. *Idem*, page 579.

25. *Idem*, page 450.

26. Deason, Physiol. General and Osteopathic, page 253.

27. Howell, Physiol., 4th Edit., page 68.

28. *Idem*, pages 69, 70, 71.

29. Howell[28] also emphasizes the importance of the accumulation in the tissues of the products of muscular metabolism when the circulation is impeded, and states that in uninjured resting muscle there is 0.03% or less lactic acid, after tetanization 0.22% unless an abundant oxygen supply is present, in which case no accumulation of lactic acid can be detected.

allowed for all waste products to be removed from the blood. The blood from a fatigued animal injected into a rested animal causes fatigue. The products of metabolism capable of producing this fatigue are lactic acid,[27] carbon dioxide and acid potassium phosphate; and if an abundant supply of oxygen is not present, an accumulation of these products does actually occur; the first effect is an increase of irritability of the muscle, followed, if the accumulation is continued, by a total abolution of irritability.

Waller[30] has demonstrated this very conclusively in the laboratory working on the irritability and conductivity of nerve; and using the wave of negativity as a direct measure of the impulse has demonstrated very conclusively the effect of carbon dioxide, carbon monoxide, ammonium, oxygen, anesthetics and other gases. He says in part:

> The apparent exhaustion of nerve when a nerve-muscle preparation is submitted to prolonged excitation is not an exhaustion of the nerve but an exhaustion of the organ of intermediation between nerve and muscle, which is the weak link in the neuro-muscular chain, being the point at which functional failure is first manifested in fatigue, nerve degeneration, intoxication by curare, and death. The negative variation of nerve is little affected by prolonged stimulation, while the negative variation in muscle declines pari passu with the declining contractions due to fatigue of the motor end plates. In a considerable minority of cases the relation between positive and negative variations were gradually and temporarily changed in a way that could only be due to alterations developing in the nerve itself and finally, in some cases, most frequently in stale nerves and in drugged nerves (*i. e.*, by urea), the excitory variation was throughout reversed.
>
> The negative variation by direct excitation was found to be identical with the negative variation of propagated excitation. Between 30 and 40 degrees the excitability declined and disappeared to return with a fall of temperature. The excitability of a dying nerve gradually diminishes to be restored by subsequent moisture. Tests were made with chloroform, ether and other anesthetics, carbon dioxide, carbon monoxide, nitrous oxide, oxygen methane, coal gas, hydrogen, sulphide, chlorine, ammonium, hydrocyanic acid and amyl nitrate (impure). Coal gas, oxygen, carbon monoxide and nitrous oxide produced no effects, while more or less pronounced effects were obtained from all the other gases named. Among these various gases carbon dioxide afforded results of most physiological interest, as, indeed, might have been expected in the case of one of the chief terminal products of protoplasmic action. Expired air passed through the chamber caused an augmentation of the negative variation where room air had no effect, which was interpreted to be a carbon dioxide effect. The typical effect then of carbon dioxide upon normal nerve is a brief abolution followed by a prolonged augmentation of excitability. Smaller amounts of carbon dioxide produce a primary augmentation which diminishes and is followed by a secondary further augmentation. Large, moderate and small amounts refer to individual nerves, a large nerve taking a larger amount of carbon dioxide to get the minimum effect, they likewise give a more distinct effect of tetanization.

The nerve, serving as a reagent in all states, reacts in all particulars to tetanization as it does to carbon dioxide. Carbon dioxide in small quantity produces an augmentation of the negative[31] or south deflection, and the delicacy of the reaction is extreme. Going pari passu with the wave of negativation is the liberation of inorganic potassium salts[33] and with the return of the positive charge colloidal equilibrium is again established.

A coagulation[34] of some one or more products of the axis cylinder is an immediate consequence of injury, and the occurrence of this process is accompanied by an appearance of potassium salts for the first time in a state of simple aqueous solution. In fact, a local injury reveals potassium salts which otherwise escape detection.[35] In the axis cylinder at any point, the injury current can alone be explained as a consequence of the diffusion processes taking place at the site of injury, and it is so definitely related to the surrounding medium that it can be reduced, balanced or

30. Waller, Phil. Trans., 1897.

31. Carbon dioxide acts as an inhibitor to the electrical reaction and spontaneous beat of heart muscle, which is a direct contrast to its action on voluntary muscle and nerve.

32. Waller and Sowton. Action of Carbon Dioxide on Voluntary and Cardiac Muscle. *Jour. of Physiol.*, Vol. 20, 1896, XVI.

33. J. S. MacDonnald. The Structure and Function of Nerve Fibers. Proc. of Royal Soc., London, Series B, Vol. 76, page 322, 1905.

34. J. S. MacDonnald. Proc. Physiol. Soc., June 17, 1905.

reversed by alterations in the medium into which the diffusion takes place. A solution of salts of extraordinary concentration is to be found at any site of injury to a nerve fiber.

Reference has previously been made to the ease with which the specific ionic content of a nerve can be determined by placing it in solution of known contents and measuring the electromotive force.

The combination of ions in solid substances[36] are broken down by heat, electricity, and solution. The presence of so large a proportion of water in the cell cannot but indicate that metabolic processes are brought about essentially by ionization, resulting from solution, and not primarily from the dissociative effect of heat, although the body warmth promotes the process. If the blood flowing to the medulla is warmed above the normal, so increasing the rapidity of the metabolic changes in the respiratory center, the respiration becomes much quicker and shallower, whereas, if the metabolic changes are depressed by cooling the blood the movements become much slower.[37]

The spinal vasomotor centers are likewise stimulated by the lack of oxygen,[38] excess of carbon dioxide, and weak acids in the blood. In the case of oxygen lack, there is an increased proteid decomposition[39] which may be largely intraneuronic.[40] They may reach a local concentration sufficiently high to excite the centers before any appreciable quantity is present in the blood stream. Carbon dioxide, sufficient to excite the vasomotor centers, depresses the skeletal reflexes, while lack of oxygen and injection of acids excite the vasomotor and skeletal centers. If oxygen is completely withdrawn, the cell is injured to the extent of a cessation of all automatic[20] protoplasmic movements, but is capable of responding to electrical stimulation, and will respond automatically if oxygen is again applied within a limited length of time, the changes taking place more rapidly in nerve than in the less highly specialized tissues.

In the spinal rabbit[42] the reflexes are abolished by arrest of the circulation in less than one minute,[43] the vascular reflexes being the last to disappear; and Vernon[44] has shown that this excitability may be restored and maintained for a short time by profusion with oxygenless saline due to the washing away of the toxic products of fatigue from the tissues; but after forty seconds,[43] oxygen deprivation re-establishment of the circulation fails to restore the reflex functions. The nerve trunks of anemic animals fail[45] more rapidly than those or normal animals.[46]

The blood in venous obstruction has been studied by Sherrington and Copenhagen.[47] They found that the blood of the affected part undergoes a considerable rise of specific gravity. In one of their experiments the specific gravity was raised from 1,057 to 10,606, and the corpuscles increased from 6,550,000 per centimeter to 8,465,000; in another, the specific gravity before was 1,058, after 10,686; corpuscles, before 6,322,000, after 10,289,000. In venous and arterial obstruction specific gravity before

35. *Idem*, March 18, 1905.

36. Adami, Princip. of Path., Vol. 1, page 86.

37. Schafer, Vol. 2, page 291.

38. Mathison, *Journal of Physiology*, page 416, Vol. XLI.

39. Krehls Clinical Pathology, page 226.

40. Vernon states that all the experimental evidence[41] available tends to show that the processes of tissue oxidation take place in more than one stage, and that the earlier stages are more readily accomplished than the final stage which leads to the production of carbon dioxide since the incompletely oxidized products of metabolism are more powerful than carbon dioxide, this makes autostimulation more probable.

41. H. M. Vernon, The Mechanism of Tissue Respiration, *Science Progress*, Vol. 2, 1907-8, page 160.

42. Charles Ricket, Physiol. des Muscle at des Nerfs, Paris, 1882, page 716.

43. Schafer, Vol. 2, page 835.

44. H. M. Vernon, The Mechanism of Tissue Respiration, *Science Progress*, Vol. 2, 1907-8, page 160.

45. Schafer, Vol. 2, page 477.

46. It is common knowledge that the blood supply is essential for the maintenance in their normal conditions of the living structures of higher animals, and it is the central portions of the nervous system that are most readily affected by blood changes, and of these the cortex is more rapidly impaired than the bulbospinal system.

47. Sherrington and Copenhagen, *Jour. of Physiol.*, Vol. 14, page 58.

10,586, after 10,583, corpuscles before 6,183,000, after 6,093,000. Thus it is seen that passive congestion produces greater blood changes than complete arrest of the circulation. As I have previously shown, the life of the cell is not compatible with a complete arrest of the circulation for any considerable length of time, while in venous congestion it is not only not destroyed, but if the congestion is continued, the products of metabolism accumulate and their irritation produces a productive inflammation.[48] The cells, particularly the protective and supporting cells, in the affected area take on an active proliferation which produces the fibrosis of joints and muscles with which all are so familiar; this is the normal (protective) reactive process of the organism, and if the irritant is continued will produce an overgrowth of new tissue (tumor), just as a tree which is frequently chopped down will produce a heavy growth of underbrush around the parent trunk. Unless the irritant is of sufficient magnitude to overcome the reproductive powers of the cell, and even then if the nucleus is still intact, cell regeneration is still possible;[50] but if the nucleus has been destroyed or removed, the cytoplasm cannot grow, although it is capable of such manifestations of vitality as respiration,[51] motility, the formation of contractile vacuoles, the seizing and destruction of minute living organisms, and, in the vegetable cell, the formation of starch. Such action is probably dependent upon the presence of matter in the cytoplasm previously secreted by the nucleus, as the nucleus is necessary for continued katabolism and anabolism of the cytoplasm. The nuclear membrane, as the cell membrane, is semi-permeable; and while the latter is of a lipoid nature, the former is made up of nucleo-proteid, insuring a distinct difference between cell body and nucleus, but as proteids are somewhat widely solvents of each other, this allows of sufficient mixture that the nucleus is distinctly modified by its environment.

Upon this power of the nucleus to reproduce the parent cell[52] lies our ability to correct paralytic and other conditions in which there is a partial or complete loss of function from the destructive action of an abnormal environment.

All cells in the higher organism are modified, or we might say specialized, by a particular arrangement of certain atom groups and ions. This selection and grouping of certain ions is necessary for the specific action of the cell, and its action is necessarily modified, changed, or annulled by rearranging its ionic content, which is easily accomplished, for proteids in the living organism exist in a condition of "moving equilibrium."[54]

The difference between living and dead protein is that the living active protein molecule is so placed that owing to the attractions and chemical activities of the surrounding atoms and molecules, the side chains of the protein rings are in a state of continual change, an unsatisfied affinity now becoming satisfied by the adhesion of certain of the surrounding atoms or radicals; and, again, other side chains of the protein ring becoming detached owing to the more powerful action exerted upon them by the surrounding molecule, so that once again certain affinities of the protein molecule are unsatisfied; whereas, in the "dead" protein molecule, the side chains have all become satisfied, the molecule is inert and unable to form other combinations. The constant reaction and interaction between these molecules and the medium in which they exist must be regarded as the primary basal characteristic of living matter.

48. In the slightest grades, and again in microbic inflammation, where the toxins are not too concentrated, cell proliferation may show itself as the very beginning of the reaction. In severer grades it is only with resolution that it becomes marked. In intermediate grades cell destruction may proceed at the center, while at the periphery, where the irritation is less intense, proliferation may be in evidence.

49. Adami, Princip. of Path., Vol. 1, page 444.

50. Adami, Princip. of Path., Vol. 1, page 43.

51. *Idem*, page 44.

52. No matter how grave the disturbance[50] to the cell body,[53] if the nucleus is still intact, cell regeneration is still possible.

53. About 1/27 of the cell mass (protoplasm) must remain intact.

54. Adami, Princip. of Path., Vol. 1, pages 66-7-8.

The available energy of a living cell at any given moment may be regarded as made up of two factors, viz:

First. The total osmotic pressure of all the dissolved substances present in the cell. (Kenitic energy).

Second. The chemical energy of these substances, *i. e.*, the total energy, which will be produced when they undergo complete oxidation. (Potential energy).

Since the actual energy of the cell is represented by the osmotic pressure of its dissolved molecules and therefore depends on the total number of the molecules present, the molecular concentration of the dissolved substances in the fluid pervading the cell becomes a matter of great importance, the actual energy of any cell is therefore determined solely by its molecular concentration at the moment, whereas, its potential energy depends on the nature even more than on the amount of the substances which are present in solution.

According to the nature of these substances, so the reactions and the behaviour of the cell will differ. Diversity of function implies diversity of structure and composition.

The heightened excitability of a nerve[55] following the withdrawal of water by drying or increasing the osmotic tension of its environment with glycerine or salts, is probably brought about by a disturbance in the molecular equilibrium of the nerve in the same manner as it is by any other stimulating agent. The disturbance at first not being of sufficient magnitude to constitute an evident excitation[56] may later attain the requisite magnitude; or in the earlier stages the equilibrium of the molecular state being upset and thus rendered less stable, the action of any additional external disturbing agent[58] readily causes the necessary magnitude of disturbance which constitutes an excitation. We have here an illustration of a fundamental characteristic of nerve. All stimulating agents when too weak to evoke an excitation operate upon the nerve so as to disturb it in a direction, which, if more intense, would constitute an excitation, thus rendering it easier for an external stimulus to evoke the true excitatory effect. We have examples of this surrounding all lesser injuries, minor subluxations, etc., where the disturbance is not painful in itself; but when augmentated by pressure, such as is made in examining the part, the pain may be intense, the continual train of subliminal stimuli from the existing condition having made the structures more irritable,[60] so that under normal conditions what would have been a subliminal stimulus in itself becomes a painful irritant. If the contracture around such simple injuries continues, irritable products will accumulate to such concentration that they produce the typical inflammatory pain. It was formerly thought that this inflammatory pain was due to pressure, but all the experimental evidence available tends to show that gradually increased pressure[61] in the tissues produces anesthesia, and that the pain is an expression of irritation of the nerve endings by the diffused toxins (products of inflammation, accumulated products of tissue metabolism, etc.). The severe pain of inflammation in dense tissue has been erroneously ascribed to pressure on nerve endings. It is in

55. Schafer, Vol. 2, page 488.

56. Pflueger considers that the molecular processes in a living cell may be divided into two sets, those tending to produce a discharge and those tending to prevent a discharge, katabolic and anabolic, and the effect of applying a stimulus is to increase the metabolic processes. In order that these excitatory may prevail against the inhibitory, they must attain a certain superiority over the latter, and as soon as this condition is reached the excitatory processes break through the inhibitory and an explosive discharge results. Then the inhibitory processes are in the ascent and the impulses from without have to continue to act until the excitatory processes are again strong enough to break through the resistance.

57. Schafer, Vol. 2, pages 291 and 292.

58. Nerve is excited[44] by almost every slight change of environment to a display of function; in fact, it is a leading characteristic of living matter that it is readily excited by slight, sudden changes in its environment.

59. Starling, Fluids of the Body, page 3.

60. If a large area is involved a general irritability of the whole nervous mechanism results. We have ample clinical evidence of this in neuresthenic, hysterical and epileptic states when a little added stimulus will cause a sudden explosion of nerve force.

61. Adami, Princip. of Path., Vol. 1, page 448.

reality due to a more concentrated solution of toxins. The increased pain on movement, throbbing of the arteries which sometimes may be excruciating, and that produced by external pressure, is due to the sudden environmental change produced by the pressure which is always an efficient stimulus under normal conditions, and in a hypersensitive nerve is a severe one. While, ordinarily, the early stages of the inflammatory process are the result of local influences and independent of the central nervous system, the central nervous system may actually initiate a process indistinguishable from true inflammation.[62]

Examples of this are frequently seen in various parts of the body, such as a gastritis from a disordered mid-dorsal, a nephritis from a disordered lower dorsal, etc. I believe most of our so-called idiopathic conditions could be attributed to such causes, for, as Adami has shown, irritation[62] of the nerve endings in the injured area induces excessive stimulation of the nerve cells of the posterior horns, with irritation of the stimuli not alone along the reflex area particularly involved, but to other associated cells in the immediate neighborhood, with, as a result, not only referred pain, but reflex vasomotor changes initiated in the areas controlled by these nerve cells. This is independent of the general cardiovascular reaction, and I have shown in a previous article[63] that this irritation affects equally other functions of the sympathetic system. While the reflex power generated by irritation of a given nerve is chiefly concerned in producing a so-called specific reaction, it affects the nervous system in general, and if for any reason the resistance of the habit-reflex path is increased it will be expended upon the next point of least resistance, and if subliminal to this point, the action will be more in the direction of the inertia of the nervous mechanism at the time; but if long continued, or of sufficient intensity, it will produce a definite response of its own, dependent more upon the habits of the part than the inertia of the nervous mechanism, *i. e.*, the protective action of the splanchnics in stopping an active peristalsis of the intestines, due to a painful irritation of any sensory nerve or area. The same irritation may or may not give a vagal cardiovascular reaction. The effects of subliminal stimulation are difficult to study experimentally, but we have ample clinical evidence in the many cases of chronic constipation with a disordered, usually stiffened and contractured, dorsolumbar region; the irritation set up through these contractured muscles eventually brings about an action of the splanchnics, causing a relaxation of the bowels.

It must be recognized,[64] that if, in general, the function of the nervous system is to control and co-ordinate the various bodily functions, there are conditions under which it can stimulate one or another function in excess; therefore, we must be prepared, for example, to find that glycosuria may present itself in the absence of any primary disturbance in the organs concerned in carbohydrate metabolism (other functions similarily), just as there is a group of diseases wholly apart from internal secretions and their excess or deficiency, the cells of certain organs[65] do not carry out the metabolic processes to their normal termination. As a consequence, there are discharged from these cells substances possessing a more or less toxic action, or, through deficient oxidation, there accumulate in the system bodies not themselves toxic,[66] but obstructive to the proper

62. *Idem*, page 449.

63. Some Spino-sympathetic Reflexes, A. O. A. Journal, July, 1911.

64. Adami, Princip. of Path., Vol. 1, page 368.

65. *Idem*, pages 374-5.

66. In the comas of acidosis the acid contained in the blood (in diabetes B-Oxybutric and diacetic acid) unites with the alkali of the blood and as a result the carbon dioxide of normal metabolism accumulates in the tissues, symptoms of asphyxia ensuing. Waller has shown that in rabbits the carbon dioxide carrying properties of the blood may be reduced from 25% per volume to 2% per volume, and that the oxidations of the body are also considerably diminished. Since the oxygen content of the blood is not altered, the decreased oxidative processes of the body must be referred to changes in the cells, induced perhaps by the toxic action of the retained carbon dioxide. Very great distress, headache, flushing, and sweating occur on raising the carbon dioxide content of the air breathed to an approximate per cent. of the carbon dioxide content of the pulmonary circulation.

activity of the tissues; and in another group the intracellular metabolism proceeds aright, but the metabolites fail to be excreted, and, accumulating, give rise to disease.

Another very striking example of the power of the products of perverted cell activity is seen in injury to the tail of the tadpole[69] where there is a very small margin which is not reached by the vessels. It is possible to cut away a portion of this without touching the vessel and still the adjacent vessels dilate, the current becomes slow and an abundant emigration takes place from them, the vessel not being injured by the trauma. The same thing may occur in the cornea and is observed in a part in which all connections with the central nervous system have been destroyed. Diapedesis occurs from the vessel or vessels nearest the injury. It can hardly be doubted that this action is due to the chemical activity of some substance liberated by the injured cells. Likewise the oedema, following venous obstruction, is not due to a rise of venous pressure[70] (for although the veins are distended, the pressure rapidly falls to normal), but to alterations of the endothelium of the capillaries brought about by stagnation of the blood and deprivation of oxygen. It is possible that the extravascular tissues play some part by the production of injurious disintegrative products or by disorganization of the elastic frame work of the tissue spaces.

When it is seen how definitely sensitive the body cells are to even slight changes in the ionic content of their environment, we no longer wonder why the muscles around a subluxated articulation after contracting to protect the injured part, enter into a state of contracture through an accumulation of the products of their own metabolism, become inflamed, sore, and irritate the sensory nerves from that region, keeping up a continuous train of stimuli (subliminal or liminal as the case may be) to the higher centers, which, dependent upon the degree of excitation, become more irritable, or are actually excited, bringing about an action of the parts ordinarily reflexly served by the afferent path in question; if the irritant is continued a reaction of the next reflex path of least resistance results.

As I have previously mentioned, a cardiovascular reaction accompanies all peripheral irritations. This reaction is a general one, but soon more or less completely adjusts itself to a disturbance of the vessels supplied by the involved segment (and other reflex paths of lessened resistance). The vessels in question may from the first be dilated or constricted, but in most instances they dilate[71] within a short time, producing congestion of the part which sets up another point of perverted metabolism, and we have an inflamed area in some distant part, the process being the same whether it is a myelitis, a meningitis, a bronchitis, or a simple headache. With the tissue in this inflamed condition, its resistance to infection is greatly reduced, the stagnant blood and its exudate making an excellent medium for bacterial growth, and if the proper organism is present, our simple pulmonic congestion is a pneumonia.

In some instances, we see the process start in a particular locality and cease (although the lesion has not been corrected), to then start up again upon the appearance of another point of peripheral irritation. This may be repeated a number of times in a most perplexing manner, and I think it has been admirably explained by Sherrington,[72] who, by selecting a motor center in the spinal cord influencing a particular muscle, a center acted upon by several afferent tracts, has shown that he can bring about exhaustion of one reflex path so that the muscle will no longer respond; and then by stimulating another path to the same center, the muscle responds as actively

67. Adami, Princip. of Path., Vol. 1, page 381.

68. Rep. of the Brit. Assn. for the Adv. of Sc., London, 1912, page 624

69. W. T. Cunningham, Reference Hand Book of Medical Sciences, Vol. 5, page 1.

70. Starling, Fluids of the Body, pages 164-165.

71. There being only a few conditions in which a continued constriction is kept up, such as Raynaud's Disease, possibly some gastric ulcers, etc.

72. Adami, Princip. of Path., Vol. 1, page 400, or more completely Schaffer's Text Book of Physiol., Vol. 2, 1900, page 831, and *Jour. of Physiol.*, 34, 1906, 12.

as at first. (Synapse Exhaustion). He concludes, therefore, that there are two orders of fatigue; first, the immediate or direct muscular fatigue, due to the inhibiting action of the products of contraction; and, second, what we may term "conductive" fatigue, the neurones, as such, not being worn out, but increased obstruction being established at the synapse; or, more broadly, at the site where the neurones come into closest communication, so that the once liminal stimulus becomes subliminal to this point. The added stimulus of an extra peripheral irritation may also be sufficient to make the first again liminal.

This ability of an added stimulus to overcome an established resistance is nicely illustrated by the crossing of the respiratory impulse in the hemisected cervical cord, and although Knoll, Porter,[73] and others considered such crossing as being spontaneous, I have never observed contraction of both halves of the diaphram (with the cervical cord hemisected above the origin of the phrenics) when the possibilities of dyspnea and sensory stimulation were avoided, but have known it to continue for varied lengths of time after being started by one of the several factors, normally causing an increase in amplitude or rhythm of respiration, thus augmenting the normal but subliminal (to the hemisected side) respiratory impulse to a magnitude sufficient to overcome the resistance of the association tract to the paralyzed side.

Since in a contractured muscle we have a complete change in reaction of the contained fluids and muscle substance, with an accumulation of highly irritable substances, a consequent local inflammation and continuous train of afferent impulse, I cannot agree with Dr. E. T. Phiels[74] that the contractures in acute cases should not be relaxed, and repeatedly relaxed if we expect a maximum recovery in a minimum time. The central nervous system is not dependent upon an active or passive congestion, or anemia of any part or organ, to get an adequate blood supply in an acute or any other condition. Congestion, wherever found, and particularly in the central nervous system, produces inflammation, a normal blood supply is all that is ever needed. True enough, the normal supply of an active area is greater than that of a passive area, but this is brought about through the regulative action of the sympathetic nervous system and not by obstructing so many collateral arteries or veins by muscular contracture or any other method. In fact, the vascular anastomosis around the spinal cord is so great that it is very doubtful if the obstruction of a few collateral vessels could materially affect its supply or drainage, although it does undoubtedly set up a train of aberrant impulses to further weaken the patient.

Thus these very contractured muscles constitute one of the major lesions in such cases, and while I realize that there are many factors other than the accumulation of the products of cellular activity, local variation in the ionic content of the body fluids and cells, and the consequent liminal and subliminal afferent impulses concerned in the production of disease as a direct or indirect result of the osteopathic lesion, I consider the above phenomena of primary and paramount importance and feel that in view of the evidence obtainable we are safe in saying that irritable products of metabolism accumulate in a contractured or congested region interfering with the normal efferent impulses to the part, and cause a heightened irritability, spontaneous activity, or partial block as the case may be. They thus set up a continuous train of afferent impulses from the region which reflexly further increase the local condition and spread to adjacent anatomically or physiologically related reflex paths, producing at their terminus an area of inflammation, or at least a condition indistinguishable from true inflammation. Besides this vascular reaction, we get a perversion of the various specific autonomic functions, *e. g.*, secretion, visceromotion, etc. This action is present in any peripheral irritation and the amount of damage it can produce

73. Porter, *Jour. of Physiol.*, 1895, Vol. XVII., page 455.

74. E. T. Phiels, Physiological Reflexes of Muscular Contracture, Jour. of A. O. A., October, 1913, Vol. 13, No. 2, page 63.

depends somewhat upon its location, although it does not necessarily have to be in close proximity to a vital reflex center, for the resistance of such a center may be lowered[76] by some pre-exisiting irritation or condition, and it receives the bulk of the reflex energy generated through even as distant a tract as the peripheral branches of the anterior crural or sciatic. Since such primary processes necessarily accompany all injured or inflamed conditions, I think our conception of a lesion should be broadened from any structural perversion,[75] which by pressure produces or maintains functional disorder, to include the more correct cause of the maintenance of functional disorder, for while pressure no doubt plays some part, it is not sufficient to explain even a minority of the phenomena attending the osteopathic lesion. True enough, it is obstructive pressure on vermoles, capillaries, and to a less extent lymphatics, accompanied by a vascular dilatation and an overproduction of metabolites (in an inadequate oxygen supply) that causes the accumulation of irritable metabolic products, but to speak of this as being produced and maintained (in all instances as our definition would imply) by pressure, is both incorrect and misleading.

The pressure of a subluxated rib pushing up the lateral chain ganglion in relation is probably the best evidence of such a chain. By overstepping its normal range of motion to the extent that is caused by a contractured intercostal muscle, a rib will displace a lateral chain ganglion to the extent of shutting off its visible blood supply. In fact, I have frequently observed the closure of the small vessels on a lateral chain ganglion with each respiratory excursion of the rib in a dog in a violent dyspneoic state, as well as from an artificially produced intercostal contracture. This can be easily observed by any one caring to prepare an animal.[77]

75. Hulett, Principles of Osteopathy.

76. Which in our present method of living is by no means a rare condition.

77. For the possible effects of such a lesion see Don. C. McCowan. Jour. of A. O. A., February, 1914, page 307.

Even here irritable metabolites and products of vascular disturbances play a large part and probably affect the nerve tissue more than the pressure. This is certainly the case in less favorable localities.

Elkan-Gunst Bldg.

PORTLAND MEETING, PLAN

At a meeting of the General Arrangements Committee at the Multnomah Hotel, January 12th, definite action was taken regarding several matters. As is generally known the A. O. A. officers are each year devoting less time to the social features and more time to the work of the National Convention. It is the purpose of our committee to provide every possible resource for the smoothness of the working convention and to this end we plan many details which have not been used before. We also plan to care for the social features with great care and judgment.

We hope on Monday night to provide a reception and informal dance along lines new to the A. O. A. One afternoon, probably Wednesday, we hope to devote to the beautifully scenic Columbia River trip and we are planning it so it will involve a maximum of pleasure and a minimum of fatigue and exertion. In connection therewith we also have a tentative plan for a Columbia River salmon barbecue.

Our function is merely to provide for your general comfort, a smooth-running convention and the social features.

Now is the time to plan your trip to Portland. The accommodations will be unsurpassed and the whole atmosphere for the year will be "Westward, ho."

I wish to call your attention to the unanimous selection of Dr. R. B. Northrup, of Portland, as chairman of the Registration Committee to replace Dr. Elizabeth Smith, who, we greatly regret to say, is leaving Portland and returning to her North Carolina home. In Dr. Northrup we have a man well fitted for this important committee.

F. E. Moore, D. O.,
Chairman Arrangements Committee.

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Editorials

OUR NEW YEAR

When Julius Ceasar put the finishing touches on the calendar and for all time fixed January 1 as the day of reckoning, he perhaps little realized the trouble he was making for those who must take inventories, as well as for those who make new resolutions. But the calendar has been so fixed and the first of the year has again rolled around and as a profession we have not only to take stock but to make resolutions as well. It will be an unfortunate year for us when we do not take stock and do not make resolutions, and the more uncertain or perplexing the outlook, the more careful and thorough should be the stock-taking.

THE STOCK-TAKING

The only confusing phase of the present situation grows out of legislation. There are so many imitations of osteopathy, and imitators are so quickly bred, that there is great danger of confusing or disgusting the law-making bodies of the states, with the result in grave doubt. Furthermore, this situation is causing many of our own people to be affected with haziness of vision and unsteadiness of gait. They seem not to know where they are nor how to get out of a difficulty. The ranks of the medical practitioners are thinning out, as they raise standards and improve the personnel of their representatives, (whether or not their efficiency is increased, is another question). They also do their full share of boasting and self praise through the public prints, and are making their company appear very desirable to some who have gone through the osteopathic colleges, as well as to some of those who are teaching in them.

The practice of drug medication, and osteopathy in most states, are regulated and this, while granting certain privileges and much in prestige and standing, also sets high standards of entrance requirements and prescribes four or five years of college work and very rigid examinations for licensure, none of which is required of our imitators. This condition disgusts many with the system of mechanical therapeutics.

It is a queer state of affairs, when one comes seriously to consider it, that the qualified man, of whatever school of practice, although graduated from the best college in the land, must submit to all kinds of examinations and tests and investigations, while the rank imitator, having made no serious preparation, can practice where he will and no one molests him or makes him afraid. Hence their name is legion and the most desirable states are their possession, and they succeed largely by the advertising value of sheer numbers.

Therefore it is not an altogether smooth road which lies ahead of the osteopathic profession as the good year 1915 opens. We must meet the requirements which as a means of elimination medical men have set for themselves, and yet this fact does not rid us of this hoard of imitators which

constantly follows at our heels and are ready to offer their services (?) wherever osteopathy has established a reputation for the mechanical form of treatment.

What is to be the ultimate outcome of this trend of affairs? How long are the states going to make fish of one class and fowl of another? How long is the public going to stand, not for the discrimination, because that doesn't touch them personally, but how long is it going to stand for the State setting standards and requiring compliance with them from some and giving others who have made no preparation the opportunity to prey upon the gullible?

And has it occurred to you that the public assumes that these people are licensed, that the average person knows doctors and dentists are examined and licensed, and it does not occur to him that this difference would be made. It could not be in any other line but this most important line. The health advocates and the disease-prevention movements have not intelligently undertaken the subject in hand until they have given this question serious consideration and are ready to suggest the remedy.

The remedy which contemplates less than a license or permit to practice from the state to every one who is permitted to treat disease is short-sighted and inefficient. Two or three years ago the JOURNAL suggested a plan which contemplated placing the whole system of regulating the healing art in the hands of the Educational Department in the state, and giving this department authority to appoint boards or subcommittees for every form of treatment. Then require definite educational qualifications and grant specific limited privileges in practice. For instance, a very extensive course of training and rigid examination for surgery, and a much more limited educational requirement for those who would be permitted to use only mental means in treatment.

More recently the Nebraska Association has suggested a plan which contemplates handling all of the mechanical schools of practice on much the same basis as the drug schools of practice have been handled, that is, set a standard for preliminary education and of professional training, which will be the same for all classes, and then give all so licensed equal rights and possibilities to representation on the Board, just as allopaths, homeopaths and eclectics have representation on medical boards today. We can see advantages in each of these plans, but the present muddy and troubled waters will not be cleared or stilled until the principle involved in both is made universally effective—the principal of exact justice to all who treat the sick.

It is our confident belief that the legislative situation is responsible for the difficulties with which our profession has to deal today. We say our educational problems are basic and fundamental, and this unquestionably is true; but the educational problems would be easily solved if we did not have to take into consideration in solving them the attitude of the state toward the practice of the healing art. Without this we could establish a system of education which exactly met our needs; that which experience had proved made the best osteopathic physician. But here the state comes in and says, if you do that your practice must be limited, you can do only certain kinds of practice. While feeling confident to meet disease, the osteopathic physician feels unqualified and at a disadvantage to meet this false position forced by the state. It is safe to say that if left to ourselves to work out our educational problems we would hear little or nothing of the teaching of materia medica and there would be no demand for a course in prescription writing. A recent report to our Department of Education contains the following siginficant sentence:

> That it is the opinion of this committee that the teaching of materia medica and pharmacology in an osteopathic college is a detriment rather than a benefit to the osteopathic student, regardless of the personal point of view of the instruc-

tor; that the osteopathic graduate from a school that teaches much and straight osteopathy is better fitted to promulgate and advance the science of osteopathy than the graduate who has a smattering of drugs even though received from a corps of instructors who deprecate their use.

If the laws in several of the states did not assume that the treatment of the sick required a knowledge of drug medication it is safe to say that the above statement would be universally accepted within the profession, or certainly it would have been so accepted if we had not been compelled within recent years to modify our teaching to meet the demands of existing laws.

If there has been anywhere a leaning away from the principles underlying osteopathy and a substitution therefor of medical thoughts and methods, it has been due, not to disappointment in results secured, but to conditions created by the laws in some of the states. Makers of these laws seem to assume that drugs are necessary to the treatment of disease and that those who would follow any other system or depend upon any other measures are faddists, and special provisions must be made for them. Yet it is none of the states' business to establish standards of treatment. The state may establish standards of qualification and equipment, but it is no business of the state to recognize any system and thereby make of it state medicine. That is what practically exists throughout the country, and because of this fact some osteopathic physicians, to gain social standing and full legal recognition, have tried to attach themselves to the medical organization which the state has recognized as official medicine.

THE REMEDY

Our way out seems to lie by the route of educating the public and eventually the legislatures to a more accurate idea of the treatment which must be accorded the healing art. In the meanwhile we must modify our own position as little as may be necessary, in order to give us the opportunities to hold on and fight for these wider reforms. Undoubtedly, many of the social-uplift and world-betterment movements can be interested in bringing about broader and more just legislation, and as our people, individually and as organizations, become identified with these movements, and as we form clinics and show that we are doing our share in this organized effort, we reach a position where we may expect their help.

For the present, however, we should look closer home and consider every means by which more and better osteopathic physicians may be put into the field. In the first place, we should get the idea out of our heads that the demand for osteopathic physicians regulates the supply. The contrary is true. The supply will greatly increase the demand. It is the best possible publicity we can gain to show a steady and constant increase in the number of men and women practicing osteopathy successfully. The fact that the demand exists cannot be questioned when the number constantly increases and they are kept busy. And because a few are not busy or do not easily find a clientele does not argue that there is not room for others and that these may be busier if the constant increase in numbers emphasizes to the public that the demand for their services exists.

This outlook is materially brightened by the fact that almost 1,500 students are now in the osteopathic colleges. As a whole, the colleges have more than held their own, while the higher literary institutions, and particularly the medical colleges, have shown a great falling off in attendance, due to business conditions. Some medical colleges have less than thirty per cent. of their normal attendance and a great many have not more than fifty per cent. It is also gratifying to know that the students in the osteopathic colleges are of excellent material and are receiving a good osteopathic education. They will go out with a knowledge of many more subjects than the colleges taught a few years ago; but some of them, unfortunately, will go out without having had the principles and practice of osteopathy

drilled into them as thoroughly as we should like. But they went into the college because they believed in the efficiency of osteopathy and the opportunities it offered them, and they will go out to practice it, and sooner or later, (with our help the day will be hastened) they will find that strict osteopathic work is the successful treatment, and it is the only treatment which is wanted by well nigh all those who seek their services.

One serious handicap is the lack of osteopathic text books. Perhaps it will be news to the profession (and not good news) that the teaching of osteopathy has come to be almost a "from word of mouth" process. Twelve or fifteen osteopathic texts, suitable for school use, have been written and for several years were upon the market, but practically not one of these now is to be had in the colleges, because they are out of print. They are out of print for the most part because of non-support due to jealousy on the part of the colleges which seem disinclined to use as a text book a work produced by a professor in another osteopathic college. You will find them listed in some of the catalogues, but the inspector could not find them in the students' hands, because they are out of print. Consequently the student gets his instruction by lecture. He takes notes and must depend upon these and his recollection to take him over the difficult places in practice. This is indeed a serious situation, and it is hoped and believed that the Research Institute at a very early date can be the means of bringing out revised editions of these osteopathic texts. They certainly should be in the hands of every student and perhaps with the assurance of support which publication by the Institute should guarantee, others who have had excellent training and experience can be induced to bring out texts which we very much need.

There is an increasing loyalty towards the colleges. The recent inspection and the work of the Department of Education this year will bring about the recognition of our dependence upon the colleges, of our duties to the students, and of the colleges' responsibility to the profession. With this established our educational problems are greatly simplified.

The organization is more and more each year meeting the needs of the profession, and never as at present has it had the support of the profession, in spite of scarcity of money and business depression in many quarters. The most valuable asset of the organization is this good will and loyalty of the profession toward it.

THE RESOLUTION

In inventorying the profession in the above article, as well as in other similar articles in recent years, we have tried to keep in mind the student-readers in our colleges and the many new members. The practice of osteopathy—every phase of it—belongs to every loyal practician—he owns his part—he has an undivided interest in it. Here at the office we look at it in that way and we want every member to have that view and act accordingly. Therefore, we give you from time to time a statement of inventory; we want your co-operation, and we want your suggestions—we want to follow them.

From this point I must use the singular number and feel that we are talking together. As I write this it seems to me I should do so. For almost a dozen years I have done little else than try to hold your business together and extend it. The A. O. A. has come from three or four hundred members to as many thousands. I have seen it grow from a rope of sand, supported only because it contained the possibilities of usefulness, into an effective organization far more loyally supported than that of any other medical body; an organization whose justice and fairness compel respect, and whose value to its members commands support.

I have watched the people who wait for the new go to osteopathy, in the days when it excited curiosity; and I have seen

them leave it for its imitators and imposters, because their curiosity had been satisfied. I have seen the community on cool second thought come to it because it had made good and these will stay with it so long as it does make good.

In these years we have come to know the effect of the osteopathic lesion. We have rounded out from a one-idea-specialty to a system which, if wisely developed and well held together, is to be the basis for the finally accepted system of healing. But these contingencies—there's the rub.

Many times I have wondered, when I have seen the overwhelming opposition of state-entrenched medicine, if we can gain a foothold for osteopathy, but the efficiency of osteopathy demonstrated somewhere or with some person of influence, has carried the day. I am not a fatalist and I do not believe that what is true must necessarily prevail in your time or mine. I believe that even a thing of merit requires brains of a high order to establish it, but that a thing of merit *can be established* with the aid of energy and brains.

I have seen the personnel of the profession change, and I have seen those engaged in practice develop in intellect and in those finer qualities that make real men and women. This has gone on until I know of no body of people superior to this profession, and I believe I know them fairly well. As I look into space and think them over, I see a composite picture of faces known to me beaming with intelligence, radiant with satisfaction, aglow with courage. When recalling the struggles and accomplishments of past years I see an army of hands that have responded when danger and duty called, and I know there are as many more whom I do not personally know.

Osteopathy needs those heads and those hands, every one of them, just now. You have done your duty, may be once or a dozen times, but you are not off duty in the presence of danger. You think you have served your time, but the time still demands service. You feel that you should give the younger members a chance. True, but when you fall away you set the example and soon we have a state approaching indifference. If the practice of osteopathy only meant a living for those engaged in it and incidentally some help to those who employ it, I should not for a moment be connected with it, nor would you. There would be no enthusiasm in that to me, nor would there be for you, but I know that the practice of osteopathy is to inherit the earth, and that energy and brains only are needed to hasten the day of its coming into its inheritance. Therefore, I can't see you lose any of that splendid interest which in twenty years has done for the establishing of osteopathy what has required a century to do for any other practice.

The possibilities in osteopathy, the bigness of the concept, the efficiency of its application to disease should sustain our interest and renew our energy. Don't lose sight of the main issue. It is not for our interest and our generation we are working, but it is making history such as has not been made since our forefathers hewed the great Republic, the model for government of all time, out of the primal forests.

Let our resolution be, then, to show a little more of the old time zeal, an interest and a courage commensurate with the great odds at stake and the great results to follow. Because we are 3,000 or 5,000 does not mean that support can be divided by ten or twenty. It means that our needs and our difficulties have been multiplied just that much. I know these splendid men and women are equal to the task and I know when they realize that the task still demands their help they will respond. With this assured, we may look with complete confidence to the new year. In this issue and from month to month in these pages activities needing encouragement will be mentioned. In a word, give those who are active in our local, state and national affairs the assurance that you are with them. H. L. C.

PUTTING SALT ON THE TAIL OF AN IDEA

To most of us the practice of osteopathy is a means of livelihood and, hence, we are dominated by the bread and butter view of it. In this respect we do not differ, in our psychological state, from that which dominates practically all mankind, in the struggle for those things which contribute to maintain material existence, or to make such existence more pleasurable. This fundamental struggle is the major influence dominating those who engage in any phase of the healing art. Salesmanship, therefore, crowds itself to the front and exhibits all the arts known to that subtle force known as suggestion.

In order to create a market for osteopathy all the failures, derogatory opinions and sad accidents in the history of earlier medical practice have been marshaled to drive other schools of medicine out of the market. The spot-light has been focused on the weak points in medical practice. Failure has been "played-up" in lurid headlines. Over against all this record of failure the new school proclaimed its theory of structural cause of disease, urged the potency of corrective adjustment and believed in its infallibility. Under the influence of these two forces, i. e., the record of past failures in medical practice and the plausibility of the new theory, a great impetus was given to osteopathy. Everywhere men and women, graduates of our colleges, went forth armed with a mighty spirit of infallibility. Nothing was too hard for them. They knew no failure. They saw no other way of battling disease except with their hands. If apparent failure came their way it was easily explained by the fact that their personal lack of skill prevented their putting salt on the tail of their idea, i. e., finding and fixing the lesion.

This exalted state of confidence in the infallibility of a theory can be maintained indefinitely in certain minds, but in the average mind, not open to such profound suggestion, there is an ever active process of analysis. Students are just average people and, hence, their minds can be classified broadly into suggestible and analytical groups. The one group accepts without analysis and constitutes that class which believes in the infallibility of a theory or a method. Members of this group have personal failures but their theory is infallible. If they ever perceive any fallibility in their theory, or dogma, they abandon it utterly; there is no middle ground. Since no theory in medicine, or dogma in religion, is infallible, we find many of their adherents constantly shifting ground as evidence of fallibility dawns upon them. It is from this class the most enthusiastic boosters and knockers, extremists, is derived.

The simple fact that "structure affects function" appeals to the intelligence of everyone. As a simple fact, related to many other facts, it is pregnant with importance; but when, however, we translate this importance into an all pervading original cause of disease, dominating every other cause, we are bound to fail to win the respect of analytical investigators.

Ever since mankind began to seek for causes of natural phenomena, the One Cause of everything has been man's objective. This centuries-old-search for a First Cause has created in the human mind a readiness to give unusual value to anything which seemed to be a starting point for a series of natural phenomena. The less one knows of natural phenomena in general the more one credits with universal importance any easily apparent factor, numerous examples of which are known to him.

> The nest's encircling brim
> The World's horizon was to him,
> Scarce had he peeped beyond.

Religion shows this tendency of minkind in its numerous dogmas. This habit of thought, i. e., crediting a certain dogma with supreme importance, which we see charac-

terizes the spiritual experience of mankind, is naturally applied to his moderate excursions into the realm of pure intelligence. It is, therefore, natural and easy to endow any cause, numerous examples of which are known to all, with universal potency.

The history of medicine is a continued story of the rise and fall of dogmas, each of which was applied to every sort of illness without discrimination. Each of these potshots at disease brought down some useful facts and, as experience ripened, rifle shooting, at individual diseases, became more popular. There remains, however, this very human tendency to dogmatize in medicine. In this respect it seems we have not developed far enough, in applied intelligence, to break all analogy between the present day practice of the healing art and the exercise of our religious tendency.

In the contest between religious dogma and the co-ordinated facts called science, any fact which seems to bolster the fundamental tenets upon which the plan of salvation is constructed, will receive a hearty welcome. The whole plan of salvation is founded upon the supposed fall of man from his high estate in the Garden of Eden. In other words, man was created perfect but he brought upon himself all his later troubles through disobedience. Is there not a very striking analogy between this religious tenent and the osteopathic theory, that, we are created perfect but we become subject to illness because of disturbance of our body structures, i. e., disturbed function is caused by disturbed structure?

Returning now to that other group of teachers, students and patients whose minds are characterized more by analytical tendencies than by suggestibility: to these people any new fact must be in some way related to other facts previously known. This desire to understand the force which governs the stars in their courses, the history of the earth's strata, the relationship existing between ourselves and other living things, dominates their attitude toward every explanation of natural phenomena. A new theory of the cause of disease must, in their minds, harmonize with the known facts in some of the divisions of science. If it does not harmonize, either the supposed known facts are not really facts, or the new theory is wrong. Proofs must be submitted on both sides. This is being done. It is a continuous process. That, however, which one group considers as proof, the other group labels inadequate and incomplete, and vice versa. This condition of affairs points again to the limitations inflicted on the human mind by an acceptance of a dogma. The ability to exercise judgment is crippled when we occupy the position of a special pleader.

Very few people possess the temperament and training which enables them to analyze life-problems without reference to the claims of established or contending dogmatists. In view of this fact mankind tends to take counsel in "results tell." But do results really tell, in the sense in which that phrase is applied to observation of medical theories? If "results tell," as an estimate of therapeutic efficiency, then every known so-called curative agent can prove its right to inflict itself on a credulous public. The curative power of Nature is a Good Fairy, always at work, who never complains when her victories over disease are credited to all sorts of possible and impossible therapeutic methods. "Results tell" of success or failure only when critically analysed, so as to establish their true relationship to possible causes.

Biology describes man as a member of the animal kingdom, one in a series of other living things subject to the same physical influences. The great lesson to be learned from the study of biology is that man holds an evolutionary relation to other living forms, in other words that his present physical make up did not originate in the Garden of Eden.

Comparative anatomy teaches the morphology of animals and shows how an organ, such as the kidney, may differ greatly in different kinds of animals and yet serve a similar purpose in all of them.

Physiology teaches that living tissue is influenced by various forms of stimuli, chemical, mechanical, thermal and electrical. All of these stimuli initiate reactions in living bodies. Upon the phenomena of reaction to these stimuli various therapeutic methods have been established, drugs, manipulation, hydrotherapy and electrotherapeutics. Each one of these methods has been practised as a one-idea cure-all. The indiscriminate application of these methods has had its day.

The study of the life history of diseases and of pathology has demonstrated the marvelous powers of adaptation and compensation inherent in living tissue.

In view of the tremendous advances, made during the past two decades, in understanding man's relation to other living things as well as his adaptation to environmental conditions, what should an osteopathic college teach its students so as to fit them to best serve humanity's needs.

Osteopathic colleges have now reached a place where they feel at least two dominating influences, i. e., the power of the organizations representing the profession and the power of the State. The first will conciously, and rightly, strive to dominate the teaching policy of the college, thus making it transmit to its students in a virile manner the best heritage of the profession. The second force is all-powerful but somewhat blind, hence is sometimes wrongly directed. The great power of the State is seldom intelligently directed in medical affairs. Here again the analogy between religion and medicine tends to hamper the establishing of science as distinct from dogma. The establishing of many medical cults is doing for scientific medicine that which it most desires. The reductio ad absurdum of dignifying all the various curative cults with State Boards of Examiners has caused the average legislator to decide that the problem, so far as the people are concerned, is best solved by a composite board which examines without regard to schools of medicine. This solution appeals to legislators because it forces each cult to known something of the methods of the others.

Wherever such a law exists the osteopathic colleges must, per force, teach some subjects not desired by their professional organizations. Perhaps after all this forced condition is a wise provision, in that it compels a study of comparative therapeutic methods and thus, in some degree, avoids too close adherence to dogmas.

The osteopathic profession has certainly developed sufficiently in the past two decades to take stock of its theories, to judge the probable demand for its services and appraise the value of what its competitors have put on the market. It is too much to believe that we experience nothing but success or that our competitors experience nothing but failure. There are, certainly, other methods of capturing an idea than by putting salt on its tail.

Dain L. Tasker, D. O.
Los Angeles, Cal.

AN INCOME WORTH HAVING

Suppose you wrote us that you knew where we could increase the Association's revenues by $2,500 or $3,000—an amount that would go as far as dues of five or six hundred members toward publicity, the Press Bureau, we will say, and more than the profession will pay for this special purpose in a year or two at the present rate. Do you not suppose we would go after it? We know where there is that amount coming to us, and you can get it or make it possible for us to get it. This short article will tell you about it. Will you read it?

Advertisers are hard-headed business men. While they want to extend their busi-

ness and increase their sales, they do not spend money unless they must spend it in order to do this. It is not sentiment with them, but results. Yet most of them will spend money where they believe they can get results, if they see they cannot get the business without spending the money.

This brings up the question of advertising in the JOURNAL. If our readers will look back six or eight years they cannot fail to appreciate the difference in character which the advertising we are now carrying gives to the magazine. It is a distinct recognition. It is, as we have said before, a notice to the world that the profession has been recognized by the commercial world. We have been able to secure this advertising, partly and perhaps largely, through the instrumentality of our friends throughout the States. They have called our attention to houses which should advertise with us and they have called the attention of representatives of these houses to the JOURNAL as a means of reaching the profession when these representatives have called upon them. The results have been as you see them. We are thankful for the results thus far secured, but we are not satisfied yet. We hope with your help to enlarge this feature of the JOURNAL's usefulness for the coming year.

Perhaps we have not yet among our patrons the house from which you get most of your medical books. Do you order direct on a charge account, or through the representative when he calls? If the former, will you not write a letter telling them you would appreciate seeing an advertisement in our JOURNAL, and write us at the same time, or send us copy of the letter? Of if you wait for the representative when he next calls, will you not tell him that you have been giving him orders and now you want to see his firm advertise in the JOURNAL, and that you will wait before giving further orders until you see if his firm reciprocates and appreciates your patronage? Then you buy antiseptics, minor surgical instruments and blood pressure and other diagnostic apparatus. There are certain shoes and corrective appliances you use or recommend and special foods for infants and convalescents. With your help the JOURNAL pages can carry a splendid line of these. Will you help? We suggested the way.

We have two objects in view in doing this: First, we may say to increase the prestige of the JOURNAL, to emphasize the influence of the profession as evidenced by this recognition. The other is the revenue. Now, when so much is needed for publicity and for other profitable fields of activity, the membership, without costing themselves anything except the trouble to speak of it, can very materially increase the income of the Association if they will insist upon reciprocity with the firms with which they do business. With your help the JOURNAL can be earning for you $5,000 per year within six months. This is the one means we know of to make the other fellow pay the bills. Yet it is no hold-up; he will get his money back many times over. But you have got to help convince him. And you can do it if you will.

If we hold on a few days before placing our orders, not let them go too easy, but state that the order will be placed when the advertisement appears in the JOURNAL of the A. O. A., we can secure this advertising, and some of it will be difficult to secure in any other way. If you give the order when the agent calls, his house will figure that it is not necessary to advertise, and that of course is true.

Now, with your co-operation we can increase the earning power of the JOURNAL by several thousand dollars and we can equally enhance its standing as our representative publication when it goes out to the world. May we count upon your continued support and your renewed activity for the coming year?

OUR DUTY TO THE NON-MEMBER

Every reader knows that membership in the A. O. A. is valuable to him. He knows that he is a better representative of osteopathy; that he knows more about his work, and that it is a greater satisfaction to him, and that his earning power is increased because of what his membership in this organization brings to him. Now, how about the other fellow who is not a member? If the Association, Journals, etc., are good for you, would they not be good for him also? If so, should you not tell him about it?

Then there is another side of it: Why not let him help bear your burden? Did it ever occur to you that his money paid into the Association will add almost as much to the value of your membership as your fee does? The overhead charges of the Association are just about so much, and if you help to get a few hundred new members it means a few thousand dollars more to spend for the establishing of the practice of osteopathy. It does not go to rent or salaries or printing, it goes to enlarging and establishing osteopathy.

But the point of most concern is the Directory. There will be no directory of the non-members issued this year. Now, we want to make the membership directory when it goes out this year as creditable as possible. We earnestly hope to put from 500 to 1,000 new names in it this year. This is the last call. We are letting the non-members know about it. If you write to him or speak to him and confirm what we have said it will get results.

Now that we are not going to publish him this year unless he becomes a member, do you not think it is our duty to him to tell him of this and warn him. And as long as it is to our personal advantage in many ways that he do so, doesn't that make it our privilege? His dues for the remainder of the fiscal year are $3.00. But he must act quickly if he catches the Directory. Will you act today?

Departments

CLINICAL DEPARTMENT

KENDALL L. ACHORN, D. O., *Editor*, Boston.

INNOMINATES

E. H. Merkley, D. O., New York, sends the following letter written to him by W. G. Sutherland, D. O., Mankato, Minn., commenting upon the method of supporting innominates described in the October Clinical Department:

"There is nothing new under the sun," and "Great minds run in similar channels." About three years ago I tried "strapping" the pelvis to holds the innominates in place, and it worked. I used a padded belt; however I believe the common everyday belt, as you suggest, will be as comfortable and as effective.

"Where, and how, did you gather the idea? I formulated the plan by experimenting with the disarticulated pelvis of 'Old Mike,' the A. S. O. skeleton, endeavoring to hold the innominates in articulation without the customary wires, bolts and screws. *This experiment lead me to conclude that on account of the uneveness of the articulating surfaces innominates cannot rotate abnormally without first a separation of the articulation of the sacro-illiac synchondrosis.* Therefore with the belt one can effectully keep them in place by keeping them from separating. In other words, one might liken the innominates (apart from the sacrum) to a partly opened hinge, the hinge turning point being at the pubes, the ilia being the wings of the hinge. It is partly closed when in normal articulation with the sacrum. The belt holds the wings together. When the ligaments regain their tonicity I remove the belt."

Dr. Merkley adds: "This explains it very nicely, I think. Dr. Sutherland discovered this procedure through study as you see, while I discovered it by accident, from having to get a patient home when he couldn't even stand on his feet. Finally I strapped his belt around the pelvis and he could stand and walk perfectly well. I like Dr. Sutherland's explanation."

ADAPTABLE TECHNIC

C. M. Bancroft, D. O., Canandaigua, N. Y., writes as follows:

"Every time I have read an article on technique in the JOURNAL I have wondered how much of it was applicable to treatments given outside of an office. Usually it is far from the kind of work which could be accomplished on a bed or couch.

"When a treating table is at hand and every convenience provided it is a much more simple matter to accomplish results than when the converse is true. I wonder if you could include in your Department of the JOURNAL something to include technique other than that to be used on a treating table? Certainly everybody is up against hard propositions in house calls at various

times and many have figured out things that should be valuable.

"Recently I read an article on the technique of innominate lesions. It was a good article but I would like to see some operator accomplish results that way without a treating table."

There is much to be said in favor of Dr. Bancroft's criticism of osteopathic technic. Send in any suggestions you may have to offer in regard to adapting technic to varying conditions. Meanwhile the following experiences of Drs. Connor and Tucker are most interesting:

A CASE OF PNEUMONIA.

Roswell F. Connor, D. O., Chicago.

Am sending brief report of a case illustrating the method by which I have in fifteen cases succeeded in aborting pneumonia when called in at the onset. I am sure that this treatment, given during the stage of congestion and engorgement when there is no marked consolidation, prevents the disease reaching the stages of red and gray hepatization, bringing about the crisis in from 10 to 15 hours.

Also these cases treated osteopathically do not present the distressing symptoms usually found in medical practice. The convalescent period is shorter. Cough is not as persistent or prolonged. Severe plurisy rarely develops. The character of the sputum is not pathognomonic, not being rusty and tenacious and the quantity being less.

A woman, age 36 years, full blooded and in good health, had been suffering from a series of colds. This attack began at 5 P. M. with a chill, the chill continuing until 7 P. M. When I saw the patient at 8 P. M. she had a temperature of 102½°, flushed face, rapid pulse, was very restless and a sharp pain in region of left breast, short dry hacking cough, labored respiration, diminished expansion of left chest. There was great cervical and upper dorsal contraction and tenderness. Muscles of respiration contracted, the rhomboids especially, so that vertebral borders of the scapulae were drawn close together.

For the first hour, treatment was almost continuous, directed to the neck and upper dorsal region and relaxing muscles of respiration. After this treated neck and upper dorsal region at half hour intervals, also raising arms above head and strongly stretching the intercostals which relieved the pleuritic pains. Every hour the entire spine was treated, and also the abdomen and liver gently. At ten o'clock an enema was given, relieving the tympanites. Room was kept at temperature of 65° with abundance of fresh air. Lemon water without sugar was given freely.

Temperature at 10 P. M. was 103°, dropping to 102° at 4 A. M. At 5 A. M. it was 101°, breathing became easier, respiration and pulse less rapid. Left lung still functioning less than right. At this hour it became easier to keep muscles of respiration relaxed. Held the vasomotor region in neck for about ten minutes and at 6 A. M. patient fell asleep. At 6.45 A. M. a profuse perspiration started and continued for several hours, the breathing and pulse becoming normal. Patient slept 8 hours and awoke with normal temperature. No food until ten hours later.

There was some pain in left upper intercostals for the next three days. Patient was treated twice a day for these three days after the crisis and two days later was up and dressed.

MENSTRUATION

Ernest E. Tucker, D. O., New York.

Responding to your request for clinical experience that may be of value I submit the following:

I find that menstruation can be controlled very readily, either for increase or for decrease. Stimulation of the 11th dorsal nerve will increase the flow and hasten its appearance, and prolong its duration. Stimulation of the sciatic nerve—I usually apply it just behind the greater trochanter—will check, diminish or delay the flow.

If both 11th dorsal nerve and the sciatic nerve are treated, the 11th dorsal seems to dominate and even to absorb the stimulation from both sources. I have proved this observation in some score of cases up to date. I first observed it only about six months ago. Leading to this discovery was the observation that at menopause sciatica occurred in so many cases. Cramps in the back of the leg accompanied menstruation, and also parturition; while abuse of the legs in walking or otherwise during menstruation is apt to check the flow.

I first applied these observations in parturition, and found that I could check the pains by pressing on the sciatic nerve. I then applied them in various cases of menstrual difficulties, and found, as I have observed, that the sciatic nerve inhibited menstruation. The relation of the lower dorsal to menstruation was discovered practically in the same way; namely, noting the great soreness in that center in parturition, menstruation and menopause.

687 Boylston Street.

PUBLIC HEALTH BUREAU

WOMEN'S DEPARTMENT

Our Committee has decided to follow, for the present, the outline of work of the Health Department of the General Federation of Women's Clubs. We give below their outline for the three sections, Child Hygiene, Social Hygiene and Anti-Tuberculosis.

Child Hygiene

"The United States is the only civilized country in the world with no system of life and death bookkeeping. With an increasing need of such information, the Government, through its Federal Children's Bureau, asks the assistance of the General Federation of Women's Clubs in securing accurate data as to our birth and death registration.

This is a rare opportunity for club women to

obtain expert guidance and support in placing our child welfare work upon the only rational basis, that we may know how many babies are born, how many die and why. Armed with this knowledge, we may more intelligently meet the perils of childhood and no longer suffer the stigma of 65 per cent. of preventable infant mortality.

All Public Health Chairmen are urged to communicate promptly with the Federal Children's Bureau at Washington for information and material for active state campaigns.

"Every child has the inalienable right to be born free from disease, free from deformity and with pure blood in its veins."

Program of Work

1914-15—Birth to Six Years.
January—Pre-natal conditions. Heredity, midwifery, visiting nurse.
February—Birth and death registration.
March—Care of the baby: a. In the home—Feeding, clothing bathing, fresh air; b. By the community—Clean milk, protection from transmissable disease, sanitary surroundings.
April—Care of young child: a. In the home—Moral, mental, physical; b. By the community—Education: Kindergarten, Montesorri; recreation: Games, playgrounds.
1915-16—Six Years to Adolescence.
October—Hygiene: Home, school.
November—Open air schools.
January—Medical inspection, schools.
February—Team work: Mother, teacher.
March—Habits: Food, sleep, play.
April—Legislation: Housing, compulsory education, child labor, age of consent.

Social Hygiene

The clubs of the General Federation are requested to further social hygiene by work along two lines:

First—By urging the passage of bills which will be introduced into the Legislatures of the various states, embodying the principles endorsed in the resolutions adopted at our Biennials.

Second—By co-operation with local and national agencies which are working to secure good moral conditions in the cities on the coast during the Panama-Pacific Exposition.

First—The three legislative measures to which we are committed are: (a) The requirement of a certificate of health, or of freedom from veneral disease, from all applicants for marriage licenses; (b) The compulsory reporting of venereal diseases to Boards of Health as are other contagious diseases. and (c) the Injunction and Abatement Act, which makes it possible, without complicated process of law, to rid a city of houses of ill-fame.

Legislative action upon the Injunction and Abatement Act is urged at once. It requires no special appropriation from the Legislature to carry out its provisions, and no extra administrative officers need be appointed. It is now in successful operation in Iowa and ten other states.

In order to forward these measures they should be presented at special club programs where they can be discussed and where formal club action may be taken. Literature for distribution at these meetings can be secured through the Chairman of Social Hygiene or the Bureau of Information. Subsequently a general meeting of all organizations in the community which are interested in these measures should be called, the measures presented, and a definite campaign outlined.

Second—The Panama-Pacific Exposition is about to open. We can aid the cause of morality by showing that the club women of the land are watching the cities on the coast, and stand ready to assist the law and order agencies to maintain high moral standards during the entire exposition period. In order to bring the situation home to every woman, we ask that each club hold one program before it closes its club year upon "What our Boys and Girls should know before they start for San Francisco."

Anti-Tuberculosis

Tuberculosis is one of the great menaces of the civilized world. America for years passed by with indifference the subject of anti-tuberculosis. Today sentiment has changed. People everywhere have awakened to the responsibility in protecting the public health. In other words, we have come to the realization of public duty toward our brother physically as well as mentally and spiritually.

The women of the General Federation of Women's Clubs have been leading factors in arousing interest and lending every effort toward waging battle against tuberculosis, and to them the Anti-Tuberculosis Section of the Public Health Department appeals to make all possible exertion during the next two years to help in stamping out this dread disease. To this end it is urged that the clubs make a study of their respective local conditions and work systematically and persistently for the following preventive and remedial agencies:

1. Sunlight and fresh air in the homes, factories, schools and churches.
2. Prevention and correction of congestion in tenements.
3. Open air schools for anaemic as well as tubercular children.
4. Outdoor recreational facilities in city and country.
5. Establishment of county tuberculosis hospitals.
6. Medical inspection of school children.

Clubs are urged to devote at least one meeting during the club year to anti-tuberculosis, having, if possible, as a speaker one who has made a special study of the subject, and where that is impossible, a local physician.

It is also requested that the clubs give publicity in local newspapers to the cause and prevention of tuberculosis, and be active in fostering a sane and effective public opinion on this subject.

—*Official organ of General Federation of Women's Clubs.*

Appended below is a list of State Chairmen who will represent the work in their respective states for the first year:

List of Chairmen

Alabama—Ellen B. Legon, Mobile.
Arkansas—Etta Champlen, Hope.
California—Margaret Farnham, San Francisco.
Colorado—Jennette H. Bolles, Denver.
Connecticut—Harriet Van Duesen, Bridgeport.
Florida—Ella Quinn, St. Augustine.
Georgia—Elizabeth Brooch, Atlanta.
Idaho—Ida M. S. Nash, Idaho Falls.
Illinois—Ethel Burnes, Bloomington.
Indiana—Julia A. Fogerty, Michigan City.
Iowa—Della B. Caldwell, Des Moines.
Kentucky—Evelyn R. Bush, Louisville.
Louisiana—Cecilia Evans, Monroe.
Maine—Virginia C. Gage, Augusta.
Maryland—Grace R. McMaines, Baltimore.
Massachusetts—Helen G. Sheehan, Boston.
Michigan—Betsey Hicks, Battle Creek.
Minnesota—Janie K. Manuel, Minneapolis.
Mississippi—Grace Bullas, Beloxi.
Missouri—Zudie Purdom, Kansas City.
Montana—Louise Smith, Missouli.
Nebraska—Corrine Larrimore, Lincoln.
New Hampshire—Sarah Emerson, Manchester.
New Jersey—Helen F. Smith, Montclair.
New Mexico—Annette H. Beckwith, Roswell.
New York—Florence E. Gair, Brooklyn.
North Carolina—Loula A. Rockwell, Asheville.
North Dakota—Helma K. Rydell, Ellendale.
Ohio—Eliza Edwards, Cincinnati.
Oklahoma—Clara Mahaffey, Oklahoma City.
Oregon—Kathryn Meyers, Portland.
Pennsylvania—Julia E. Foster, Butler.
Rhode Island—Lallah Morgan, Providence.
South Carolina—Mary Lyles Sims, Columbia.
South Dakota—Mary Noyes Farr, Pierre.
Tennessee—Elizabeth Yowell, Chattanooga.
Texas—Mary Peck, San Antonia.
Vermont—Sherburne, Rutland.
Virginia—Alice Willard, Norfolk.
Washington—Roberta Wimer Ford, Seattle.
West Virginia—Clara Sullivan, Wheeling.
Wisconsin—Harriet Whitehead, Warsaw.
Utah—Mary E. Gamble, Salt Lake City.
Canada—Janet M. Kerr, Toronto.

Lima, Ohio.

Josephine L. Pierce, D. O.,
Chairman, Women's Department.

RHINO-LARYNGOLOGY

Chas. J. Reid, D. O., M. D., *Editor*
Denver, Colo.

QUINSY

In this disease the tonsil becames inflamed and pus forms in the peritonsillar tissues. It is a disease rare in childhood and in the aged. It occurs most frequently between the ages of fifteen and thirty-five years. It seems to occur more in males than in females. More often in the autumn and spring than in winter and summer.

Etiology.—Heredity seems to play a small part. Lowered resistance may come from exposure, rheumatism, colds or previous attacks. One attack predisposes to others. I have seen many people who have had numerous attacks. The attacks occurring once or twice every year or less frequently. The infection seems to occur through the peritonsillar fossa. The tonsils may or may not be hypertrophied. Septic mouth and teeth, suppuration in the nose or middle ear, follicular tonsillitis or diphtheria may be the source of infection for an attack of quinsy. Most of the abscesses are located antero-superior to the tonsil. It may be above, behind or external to the tonsil.

Osteopathic.—There are cases that start spontaneously to all appearances. I knew a lady that had quinsy some years as high as five times. She had osteopathic treatment for it three years ago and to my knowledge has not had an attack since. Her habits are the same and sources of infection are as numerous. She has never had her tonsils removed, always being opposed to an operation. Our logic leads us to believe readily that there are causes of quinsy not mentioned previously in this article.

Upper cervical subluxations and muscular tension interfering with nerve and blood integrity to the tonsillar area are certainly to be mentioned as predisposing causes to quinsy.

Symptoms.—Follicular tonsillitis may be a forerunner with all its symptoms. It may be primary; if so, at the first there is malaise, fever and shivering. Acute pain occurs at the angle of the jaw which radiates into the neck. There is tenacious muco-saliva; head is held forward; smell and taste are impaired; the breath becomes offensive and the patient has an anxious expression.

On examination we find large and tender lymphatic glands in the neck; the mouth can be opened with difficulty; thick tenacious mucus in the throat which is narrowed by the bulging of the abscess. Oedema of the uvula may be noted. Anorexia, thirst and hot, moist skin; pulse full and bounding; temperature 102-105°; urine scanty; bowels costive; insomnia. Relief comes only with a rupture of the abscess if pus has gathered. It is usually confined to one side. I had one case in a man twenty-eight years old three years ago in which there was a large abscess back of each tonsil causing almost a closure of the fauces, as the tonsils were greatly enlarged also. The ordinary course of quinsy is from six to ten days. It is seldom fatal. May be severe hemorrhage associated with opening of the quinsy. Septicemia, pyemia, broncho-pneumonia and oedema of the glottis may occur as complications. Upon watching a case twelve to twenty-four hours a diagnosis would not be difficult.

Treatment.—Aconite, salicylate of soda, belladonna, emetine and red iodide of mercury are used medically in an effort to abort cases with little or no results. These remedies do not inter-

est us as we do have methods that will abort many cases if begun early and used vigorously. After the third or fourth day it would of necessity have to come to drainage as abortion of it would be practically impossible.

Drainage should be established early; there will be less destruction of tissue and rapidity of recovery will be facilitated. To open the abscess spray the throat with codrenen for local anaesthesia. Find the boggy area of the swelling. Push a sharp pointed forceps into it and spread the forceps to enlarge the opening as you withdraw them. A general anaesthetic should not be used in these cases. Syringe the throat with some alkaline antiseptic solution. Drainage once established, relief will be swift and certain.

Osteopathic.—In establishing drainage and using common sense cleansing methods and nursing, all physicians would largely accord. Beyond that in treatment, osteopathy has something very definite, specific and effective to offer. In efforts at abortion of the attack the first day or two manipulation to correct any cervical luxations, to loosen all contractured tissues and establish free blood flow to and from the tonsillar area. If this can be done the area of infection will clear up without forming a pocket and having to be drained. The finger should be introduced into the fauces and the area about the tonsil should be firmly treated. Squeeze out any abnormal secretions of the tonsils; press firmly for half a minute directly upon the area of swelling, which is usually antero-superior to the tonsil. This treatment should be given two or three times a day.

If drainage becomes necessary osteopathy properly applied will aid much in the rapidity of healing by facilitating the natural agencies. Digital manipulation in the mouth will aid the escape of pus and along with external manipulation of tissues will do much to establish rapidly the normal blood flow to and from the diseased region. Nerve force will be able to function to better advantage. All luxations must be attended to by treatment and corrected. Hot and cold applications and antiphlogistic preparations are used by many. They afford some comfort.

EMPIRE BLD.

CURRENT COMMENT

C. C. TEALL, D. O., *Editor*, Fulton, N. Y.

THERAPEUTIC USES OF SUGAR

For some time we have been struck by the frequent mention of sugar and its uses in the medical press and have collected the following to show its wide uses and value other than strictly dietetic. Sugar has had to fight its way to attain its present position in everyday life, for it was first looked upon with suspicion, then as a luxury, while now it occupies a supreme position in diet, therapeutics, and, at times, politics. The *Medical Record*, commenting editorially, says:

"As a quickly assimilable nutrient during the exhaustion following severe exertion and during fatigue, sugar constitutes an important article in the dietary of the artisan and of the soldier. Moreover, it has won a distinctive place in therapeutics, particularly in the treatment of shock, of postoperative acidosis, and of cardiac weakness; it has also been extolled as a local application in the treatment of ulcers.

"Many observers have proven experimentally that the intravenous injection of a highly concentrated hypertonic solution of glucose causes an immediate and pronounced diuresis by virtue of the dehydration of the body cells, and that the injection of solutions containing from 25 to 33 1/3 per cent. of sugar in doses of 15 grams to every kilogram of the animal's weight is a safe procedure. E. Enriquez in the *Presse Medicale*, February 14, 1914, points out that this diuretic action is not the result of any special property of the sugar but is evoked similarly by all hypertonic solutions. Starling has shown that the injection of concentrated solutions of glucose is followed by an increase in the total volume of the blood, resulting from the attraction of water from the tissues, which increase is gauged by the diminution in the percentage of hemoglobin. There are likewise an increase in the arterial pressure and an increase in the volume of the kidney. These three phenomena are accompanied by an augmented urinary outflow.

"Fleig first called attention to the feasibility of replacing the ordinary saline solutions by isotonic solutions of glucose, lactose, saccharose, or mannite. These solutions had a strength of about 5 per cent. Furthermore, he demonstrated clinically the diuretic power of hypertonic solutions containing 300 grams of sugar per kilogram. Enriquez essayed the use of intravenous injections of such solutions in fifty patients, in some of whom as many as thirty injections were given during the course of their disease. The solutions which were carefully sterilized were injected slowly into a vein at the bend of the elbow, one hour being taken for the injection of 250 to 300 cubic centimeters. There was no evidence of any intolerance on the part of the organism: there was, for example, no hemolysis as evidenced by the development of icterus. This benign effect is attributed to the slowness of the injection, and to the rapid transformation of the sugar into glycogen which is deposited in the liver, the muscles, and the myocardium. Under these conditions the proportion of sugar in the blood is kept within normal limits. Only very small quantities of the sugar, four or five grams at the most, pass into the urine, and that within the first two hours following the injection. It is suggested that *a priori* the injection of a large quantity of sugar into the blood of an individual suffering from a hepatic disorder would be followed by an immediate and a marked glycosuria. But actual experience proved otherwise: in two cases of alcoholic cirrhosis with ascites the introduction into the blood of 150 grams of sugar at one time caused no more pronounced or persistent glycosuria than that which followed in the average case. Besides, examination of the blood did not show any change in the red blood cells."

SUGAR FOR SHOCK

"Enriquez, who is quoted by the *Record*, seems to have gone into the subject rather deeply; in the

Jour. de Med. Interne he "advocates the use of massive injections of sugar (300 gm. of dextrose to one litre of serum) in infectious states, grave toxic conditions, prolonged inanition, and diminished secretion of urine from mechanical causes. The solutions are sterilized shortly before use by means of an autoclave. They are injected very slowly. A patient is often given in the course of two or three injections as much as a litre of the fluid, the food value of which is, of course, equivalent to 1,200 calories. The injections are borne satisfactorily if made slowly; in most cases they have given rise to diuresis at once, and in a short time to rapid improvement in the general condition. When used after hemorrhage, or for patients in whom the heart's action is feebly, the injections cause an immediate diuresis, which gives time for the slower action of cardiac stimulants."

SUGAR AND PURULENT WOUNDS

From another German source we quote from the *Journal of Clinical Medicine*:

"Having satisfied himself, first, that commercial (German beet-) sugar is free from pathogenic germs, and, second, that saccharine solutions retard the growth of germs, if concentrated even killing them, Dr. Magnus (*Muench. Med. Woch.*, 1913, p. 406) began to use it in dealing with infected wounds. The results have been very encouraging. The sugar, he explains, causes a pouring out of serum, thus washing the floor of the lesion from the inside; the smeary coating is loosened, the fetid odor disappears, and conditions for healing are established. Only in tuberculous wounds the method proved a complete failure."

SUGAR AS A SUBSTITUTE FOR SOAP

"In a little article in the January number of *The Medical Council*, Douglas H. Stewart recommends the use of ordinary granulated sugar in the place of soap for the cleansing of hands and of wounds. Some time ago he made a series of culture experiments. After washing his hands with soap and water, he found that the skin invariably revealed the presence of pathogenic germs even after the most strenuous scrubbing. Then he substituted washing the hands with sugar for five minutes, followed by five minutes' washing with chloride of lime and water. At present, it appears, he uses sugar alone, and finds it an efficient as well as convenient antiseptic.

"His advice to the doctor is, to clean his hands with granulated sugar, and also to dress wounds with it, if nothing better happens to be available. Try it, he says, for the removal of paint or plaster-paris, also to remove oil, grease or vaseline mixed with dirt. A little soap may be used first for mechanical cleansing, after which sugar and water followed by chloride of lime and water will render the hands or the skin sterile. If it is desired, the sugar may be scented, of course; thus, a little oil of geranium may be added for esthetic purposes.

"Finally, granulated sugar, being gritty, takes the place both of soap and water, yet, leaves the skin unscratched, soft and smooth; and, while there are some skins which will not stand sugar, there are more which are intolerant to soap. The epidermis of an average person is much less liable to crack or chap in winter after this sugar treatment than when soap is used."

SUGAR AS A CURE FOR ALCOHOLISM

"A novel suggestion for the treatment of alcoholism is that of B. L. Spitzig (*Jour. Amer. Med. Asso.*, Jan. 17, 1914, p. 193), who believes the development of the alcohol-habit to be due to the diminished supply of sugars ingested by these individuals. He states that as the supply of alcohol is increased the desire for sugars in correspondingly decreased, until the time comes when alcohol is taken in perference to the carbohydrates.

"Spitzig goes about the treatment of these chronic cases by prescribing a sugar-rich diet, such as cereals with cane-sugar, sweet fruits, pastries, chocolate, and ice cream. When there is a decided distaste for sugar, treatment may be begun by the administration of lactose as a medicinal powder, giving a dram every two hours; later, sugar being added to the diet as the desire for alcohol is alleviated.

"Dr. Spitzig removes the accumulated poison by means of cathartics and diuretics, and gradually weans the patient from alcohol by the substitution of highly sugared liquors for the ordinany beverage. Capsicum and nux vomica, in combination, some times are necessary during the first week, to allay the gastric irritation."

SUGAR IN PROCTOCLYSIS

Barbee, in *Northwest Medicine*, sums up most of the foregoing under the above heading, and says: "It is a valuable adjunct in treatment in which water is demanded and in which the stomach cannot be utilized for this demand. By careful observation and comparison in over 150 cases he is assured that postoperative shock is lessened, the circulation quickly equalized, vomiting diminished, thirst allayed, perspiration induced, kidney excretion increased, gas eliminated, ileus less common and, as in most of these cases in which the stomach cannot be utilized for several days, a valuable food element is constantly absorbed. Thus far he has met with only a few instances in which the patient did not satisfactorily absorb the solution. The most of these could be charged directly to faulty technic in the use of the 'Murphy drip.'

"Sugar water is rapidly absorbed by the rectum, is practically non-irritant and seems to exercise a general stimulating effect. The strength of the solution used is 15 gm. of cane-sugar and 1 litre of water. It is administered by the (Murphy) drop method at the rate of 30 to 40 drops per minute. The rate may be increased or diminished according to the patient's needs for water, or according to the rate of absorption. This rate will use approximately 3 quarts of the solution in twenty-four hours. The approximate caloric value of the contained sugar is 200 large calories. Repeated urine examinations in many of the cases fail to show its presence in the urine. In two cases of gastro-enterostomy the solution ran continuously for seven days. Nourishment in no other form was given. The patients did not complain of the slightest hunger, kept their weights and no sugar appeared in the urine. These results lead Barbee to believe that the sugar administered by rectum is convented into glucose and utilized by the tissues.

"The sugar water is started as soon as the patient is put into bed from the operating-table. If there be much shock, if the patient be deeply anaesthetized or if vomiting, he is left flat until the

position can be altered to a low Fowler, in which position proctoclysis is most successful. There are many conditions in which the patient must remain flat, but the great majority of cases may and should receive some elevation at the head. Within a short time the pulse increases in volume, the skin becomes warm and moist, followed by free perspiration, there is much less or no thirst, vomiting is lessened, kidney excretion increased and gas escapes. When these results are obtained and maintained, Barbee says, they are past post-operative shock and the fear of ileus. With a few exceptions these results follow the use of sugar solution by proctoclysis."

Another authority which cannot now be given recommends sugar highly in labor to stimulate the uterine muscle, so, it appears, that we have a very valuable adjunct in a substance, the use of which cannot lay one open to criticism.

AN ABSURDITY

"When a law is put on the books it is by a majority vote of the legislative body of the state, which body is made up of lawyers, farmers, merchants, politicians, saloon-keepers and others. The 'regular' doctors who haunt the state capitols in the interests of medical legislation are really forcing these gentlemen to be the arbiters of the great science of medicine. At first glance this seems to be as absurd as some of Dean Swift's quips, but for all that, it is a fact—a science limited by a majority of our state legislators. On this point the *Eclectic Review* remarks: 'We are not very far from the point where physicians will be put in uniform, and be classed as physicians of the first, second and third class, with regular day and night shifts, fixed posts, roundsmen, medical sergeants and grafting captains and inspectors.' To this it might have been added that the bosses are ready and waiting—also, lobbying 'in the interest of the people,' of course."

There is, also, another idea prominent in the mind of many allopaths and that is that the law is to protect them from competition. In this they are wrong for the object of legal regulation is, as Governor Johnson of California points out in a private letter, "that men may practice and not to prohibit it." The editor of the *Medical Times* is easily disturbed, as the following will show:

THE VERY WIDE PRACTICE OF MEDICINE

"It is interesting to compare the attitude of lawyers with respect to infringements upon the practice of law with that of physicians in like circumstances. Thus it was recently chronicled in the daily press that a report of a committee of the New York County Lawyers' Association discloses a professional indignation against what the committee calls 'a very wide practice of law' by persons who are not lawyers, some of whom 'have not even served a clerkship in a law office.' Such practice is in violation of the Penal Code and the committee recommends vigorous prosecution of the offenders. (*The World.*)

"There is absolutely no doubt as to what will happen to the offenders. The law is clear and action will be swift and unerring.

"But when it comes to infringements upon the practice of medicine, we encounter 'a very wide practice of medicine' by persons who are not physicians, some of whom 'have not even served as bottle-washers in a drug store.' And they get away with it.

"The trouble is with the act which defines the practice of medicine and with that particular clause in the act which exempts two great religious bodies from its operations. We are the helpless victims of a situation which no one can remedy, for public opinion ordains that the particular clause aforesaid shall remain. In the course of the years a demoralization has flowed from the application of this act which has made it possible for a horde of fakers to follow in the wake of the great religious organizations which, in a sense, practice medicine with public approval. Even though these fakers violate the medical practice law there can be no hearty interest in prosecuting them under its straddling provisions. Even systems which are not religious, like osteopathy, have profited through this well-meaning legislative burlesque, not directly, but because of the moral and mental weakness of the whole community as betokened by the language of an act which accurately expresses that community's desires on the point in question."

It would seem that after years of tinkering with the law in New York the medical men would get just what they want, but they have gone so often with their complaints and have fought everything not "regular" so fiercely that the statesmen at Albany are tired and are disposed to go to the other extreme as a natural result of so much activity.

CONTRAINDICATIONS TO VACCINATION

"As a rule cases in which vaccination is followed by untoward effects, even when all precautions are used, exhibit certain peculiarities which, if carefully investigated, ought to cause a postponement of the operation. Groth in a paper published in the *Muncheuer medizinische Wochenschrift*, February 3, restricts the subject to children. Even the law forbids revaccination of children with such acute or chronic disease as interferes with nutrition. Irrespective of this provision of the law Groth gives the following conditions, temporarily rendering the case unsuitable for vaccination: severe acute diseases, mild disturbances of nutrition, bronchitis, open tuberculosis, severe rickets, the exudative diathesis (as expressed in various forms of eczema), impetigo contagiosa, etc. These exceptions are made in part for moral effect, for in such children their infirmities are constantly becoming better or worse and an exacerbation is readily set down to vaccination, which indeed sometimes seems to cause latent affections to become manifest."

It is refreshing to find an authority honest enough to admit that there can be a condition bad enough to forbid vaccination. It will be noted, however, that it is for the benefit of the heathen rite rather than for the unfortunate child. One who is conversant with the workings of the law in New York knows that there are thousands of children who are physically unfit vaccinated that the majesty of the law may be vindicated.

REMARKABLE ANESTHETIC EFFECT OF MUSTARD OIL INHALATIONS

"In a preliminary communication Adolf Schwartz (*Muench. Med. Woch.*) states that he has discovered a remarkable action of mustard oil on the sensory nerve endings of the trigeminal nerve. If a person suffering from toothache takes a small quantity of mustard oil in a bottle, and, after closing one nostril, inhales once the fumes of the oil, the first effect is a reddening of the face, flow of tears, and difficulty of respiration. Within a very short time all pain in connection with the tooth has disappeared. If he has inhaled too much, respiratory reaction and the reaction to sneezing and to coughing are abolished, and the patient suffers some distress for the time. Provided that only one short inhalation is taken, the relief of pain is almost instantaneous and lasts for some hours.

"He has found that the pain of middle ear diseases can also be relieved by the same means, and is complete enough to render the operation of paracentesis painless without any narcosis. The patient remains fully awake, and in no case is any unpleasant after-effect produced. He has carried it out in about sixty cases, including delicate women and decrepit old people. Unfortunately it proved quite inactive in facial neuralgia, but the author suggested that it should be of value in painful conditions of the nose, nasal cavities, and tonsils."—*Critic and Guide.*

This will give a chance for you to work out the reflex and it can be combined with pressure anaesthesia without any harm to patient or morals.

FEEDING HUMANS ACCORDING TO FORMULAE

"The study of human nutrition has not yet produced a simple formula for man's guidance in the selection of his food. Such formulae have been successfully used in the feeding of rats, and the skilful stockman in his feeding operations carefully follows charts and rules provided him by experts on animal nutrition. We may expect that similar rules will obtain more and more in human nutrition and there will be, some time in the future, such a thing as scientific feeding of men."—J. H. Lyman, *Popular Science Monthly.*

As yet we are a long way from the time of such feeding, for the reason that man seldom thrives on hard and fast rules of diet. When we eat to live and not live to eat, as is the case with so many humans, it will be easy to enforce a standard ration and to our good.

IS THE CONSUMPTION CRUSADE BECOMING A BURLESQUE?

"T. J. Mays believes that the campaign of education in the prevention of tuberculosis has been followed by widespread terror and demoralization The ordinary feeling of pity and sympathy are chilled and calloused. A consumptive in a family is frequently neglected by the other members. Coughing on the street, in public conveyances, churches, and theaters is viewed with suspicion. Even the members of a family in which there is a sufferer from this disease are circumspectly avoided. The doors of hotels, of boarding houses, and even of health resorts are closed against them. The campaign of education in its present form is carried to extremes. It causes a revulsion in the minds of the people; some of its cruder elements, like the chamber of horrors, etc., should be eliminated, and one should proceed on less strenuous lines. The campaign of education has signally failed to make an impression on the course of consumption; the imprisonment of all consumptives in closed institutions, is the last culmination of a most desperate movement, which, after causing irreparable injury, will end in greater failure than any of its preceding steps. The medicopolitical reformers of the present day are nursing a monster in the form of the goddess of health, which has already riveted the yoke of oppression on their consumptive countrymen, and this on evidence so frail that it would not be tolerated by any impartial tribunal."

"Man's inhumanity to man" was never better shown than since the crusade, as shown above, began. The sufferer has been made to suffer tenfold greater hardships without any recompense to the public for the martyrdom. Fright has done great harm and no good in this instance.

Correspondence

A SUSPENSION CAP IN OCCIPITO-ATLANTAL TECHNIQUE

According to "osteological proofs" presented by Dr. Edythe F. Ashmore in the July, 1914, issue of the A. O. A. Journal, occipito-atlantal articulations are, or should be, especially important to the osteopathic physician. These articulations have experienced, under the cloak of *technique*, many strenuous pulls, jerks and snaps. Believing that the profession would welcome a successful method wherein such strenuosity becomes impossible, it is my pleasure to present a suspension cap idea.

The chief feature of this method is the adaptation of a fulcrum at the occiput, and at the same time a fixation of the atlas. With such adaptation the head can be easily rotated posteriorly on the occiput-fulcrum, while the condyles glide anteriorly in the facets of the atlas; or the head may be easily rotated anteriorly on the occiput-fulcrum while the condyles glide posteriorly in the facets of the atlas; or side-bending may be easily accomplished, without strain or pull, while the occiput rests in the cap-fulcrum, allowing the condyles to glide laterally in the facets of the atlas.

The suspension cap is adjustable to size of head. It fits snugly around the occiput, while supporting straps are so arranged as to give support directly to the occiput. This makes a fulcrum or pivotal point possible at the occiput. Fixation of the atlas being made by the operators' hand or fingers, while the free hand is utilized in turning or rotating the head. The operator thus has the advantage of a third hand, so to speak, through the support afforded by the suspension cap at the occiput.

In reducing a bilaterally posterior occiput, the

occiput rests comfortably in the cap, the operator makes fixation with the thumb and fingers of one hand on the lateral processes of the atlas, while with the free hand he gently applies pressure on the brow, tilting or extending the head backward. Remember that the atlas is in fixation and that the occiput, resting snugly in the cap, has become a fulcrum point. As you tilt the brow backward the head rotates posteriorly on the fulcrum and the condyles glide anteriorly in the facets of the atlas, and adjustment is accomplished. It is a simple, easy method; no pull, no jerk, no snap. The reduction is accomplished providing the diagnosis is correct: a bilaterally posterior occiput.

In reducing a bilaterally anterior occiput, the occiput rests in the cap as before, the same fixation being applied to the lateral processes of the atlas, but in this instance the pressure on the brow is applied in a forward and downward direction. In other words, flexation of the head, which rotates anteriorly on the fulcrum point at

the occiput, the condyles gliding posteriorly in the facets of the atlas, as easily and simply as with the previous lesion.

In reducing a lateral occiput, the occiput rests in the cap as before. If the occiput is lateral to the right, the mesial point being to the left, the head is flexed or rotated forward on the occiput-fulcrum, where it rests. One hand then fixes the atlas on the left sile, while the other hand pushes against the mastoid process on the right side, thus pushing the condyles from right to left in the facets of the atlas. The advantage gained in flexing the head on the occiput-fulcrum in lateral lesions is that the condyles glide posteriorly in the facets of the atlas to the point of widest divergence of the facets. When the occiput is lateral to the left, the mesial side to the right, fixation of the atlas is made on the right side, and the pushing is applied on the left mastoid process.

In reducing "rotation" lesions, say a unilateral posterior occiput, the occiput rests in the cap as before. If the occiput is posterior on the right, fixation is made at both lateral processes of the atlas, together with fixation of the mastoid process on the left, with one hand. The free hand extends the head on the fulcrum at the occiput and turns it from right to left. In this instance the head rotates upon an axis centered at the left facet of the atlas. In other words, the right condyle glides anteriorly in the right facet, while the left condyle remains stationary in the left facet. The supporting straps pass through a pulley, making this method of procedure possible. If the occiput be unilaterally posterior on the left you merely reverse the process.

Unilateral anterior occiputs are reduced much in the same manner.

In reducing a right posterior occiput plus a left anterior occiput, the occiput rests in the cap as before, fixation is applied at both lateral processes of the atlas and the head is rotated from right to left on the pivotal point lying midway between the facets of the atlas.

While the suspension cap is adaptable to occipito-atlantal lesions it is also helpful in any cervical lesion.

W. G. Sutherland, D. O.

Mankato, Minn.

CATARRHAL DEAFNESS AND OSTEOPATHY

Recently Drs. Edwards, Granberry, Millard, Fryette, and McConnell have been working with the Institute, making a special study of the new method of treating catarrhal deafness, hay fever and allied affections. Drs. Hollands and Collins, of the Institute staff, assisted, the former, preparing dissections of the head and neck for study, and the latter making X-ray photographs of the Eustachian tube and middle ear after bismuth injections.

Our purpose was to make a thorough study of the anatomy of the structures involved in order to develop our methods of technique; to standardize our methods of diagnosis; to compare results of our different methods of treatment, and to arrange a case report blank for use in further study. The results of our studies will probably be published in an Institute bulletin illustrated by Dr. Millard.

We know there is much value in this new method of treatment and that it has come to stay, if our profession will do all possible to develop it correctly. If our practicians who wish to specialize in ear, nose and throat work will thoroughly fit themselves for this specialty, they can hardly fail. On the other hand, if they are not willing to carefully prepare for the work, failure and great detriment to the profession will result.

First, it must be considered a specialty and one which requires much special knowledge and skill. No physician, however successful and learned along the other and general lines, should attempt this work until he has thoroughly mastered the anatomy and physiology of the ear, nose and

pharynx, and let it be understood that a book review is inadequate preparation; he must dissect. In addition, he must know thoroughly the diagnosis of the various diseases and abnormal conditions of the structures involved. He must also know and practice surgical cleanliness; he must know the lack of value of the so-called antiseptics; he must know the pathology of the various diseases common in these structures; he should attend special clinics; he must equip an office with the necessary diagnostic and other needed apparatus, and he must know how to use it; he must study his cases carefully and must not promise too much. He must know something of the limits of value of such treatment and be conservative because not all cases can be successfully treated by this or any other known method. Most important of all, I believe, is that the physician must not depend too much upon the special technique, but he must diagnose and correct the osteopathic lesions found in such cases, because without this all else is but a waste of time.

It is only five months since I began to devote my time to this specialty in actual practice and I am, therefore, only a beginner, but I have been making original investigations along these lines for more than five years and quite naturally feel much interest in it. There is no desire on my part to get credit for the original idea, although Dr. Edwards has kindly given me that honor; but I do hope to see its possibilities developed.

A number of associations have asked me to demonstrate the technique and I have done so, but I am not sure whether for good or harm, because it is only possible for one to learn enough in this way to make him dangerous. The average physician thinks this technique only a small addition to osteopathy, which in fact it is; but he does not see the need of the necessary knowledge and skill, and therefore fails, and the reaction affects the profession as a whole.

The osteopathic physician who attempts this work without thoroughly fitting himself to do it correctly is not better than the medical doctor, who, ignorant of bacteriology, tries to practice serum therapy.

The question is simply this: Are we going into this new specialty for the immediate personal benefits or are we going to use it to the greatest good for osteopathy? If the former purpose is your plan, then you cannot afford not to know what you are doing because you will get paid for results, and you cannot get results without knowing your business. You may succeed in a few cases but it will be only a very few, and you are taking much chance of doing actual injury to your patients and to our profession.

The time has come for osteopathic specialists, and we need them. If you want to specialize you can do great honor to our profession, but only by being a good specialist.

J. Deason, M. S., D. O.

Chicago.

State and Local Societies

California—The regular meeting of the Sacramento Valley society was held December 12 and the following were features of the program: "Legislative Work," discussed by L. R. Daniels, of Sacramento; "Appendicitis with Reports of 168 Cases," J. P. Snare, Modesto; "Technique," A. T. Seymour, of Stockton. The attendance was large and the meeting of unusual interest.

The California State Association will hold its annual meeting in Los Angeles next summer, following the meeting of the National Association in Portland. The arrangements and program will be in charge of the Los Angeles County Society.

The faculty and students of the College of Osteopathic Physicians and Surgeons recently held their annual field day at Long Beach. The attendance was large and the day was greatly enjoyed.

Colorado—The annual meeting of the Colorado Association will be held in Denver, January 18 and 19. The program was given in the last issue of the Journal and a report will be presented in the February number.

Florida—The annual meeting of the Florida Association was held in Orlando, December 26th, when the following subjects were discussed: "Osteopathic Examination of School Children," Drs. Sarah Davis and A. O'Neil; "Organic Extracts in Treatments of Disease," Drs. Paul Davis, L. Jones and W. Banks Meacham; "Treatment for Partial Deafness," with demonstrations of technique, J. C. Howell, Orlando; "Sex Hygiene in Public Schools," Drs. Wheeler, Quinn and Davis; "The Osteopath in His Laboratory," J. W. Crum.

W. Banks Meacham, Asheville, N. C., was the guest of the Association and gave a public address in the evening on "The Reign of the Artery Is Supreme." Dr. Pressley, who has recently returned from Paris, gave some personal experiences which were interesting.

The following officers were elected: President, A. E. Berry, Tampa; Vice-President, DeWitt Lightsey, Bartow; Secretary-Treasurer, Grace E. Miller, Clearwater.

The State Examining Board met at the same time and examined three applicants for license in the State.

Grace E. Miller, D. O., *Sec.*

Illinois—The bi-monthly meeting of the Third District was held in Galesburg, January 6th. The program in part was as follows: "Treatment of Catarrhal Conditions of Nose and Throat," Ada Chapman, Galesburg. E. M. Browne, Galesburg, discussed "The Treatment of Pneumonia," and G. E. Thompson, Elmwood, gave a demonstration of "Technique in the Treatment of Catarrhal Deafness."

G. E. Thompson, D. O., *Sec.*

The Chicago Association, at a recent meeting,

was addressed by Miss Elizabeth Walter, of Oak Park. Subject, "The Easiest Road to Health by Way of the Smile." She declared that she had discovered that facial muscles exert an influence on the rest of the body; "Smile and your body smiles with you; weep and you breed disease" is the keynote of her system of healing. She advocates careful relaxation and contraction of the facial muscles daily.

Smiling may or may not be a means of establishing health, but it seems to be pretty generally admitted that a recent President smiled himself out of office. A smile is all right, but it has its place.

Louisiana—The State Board of Osteopathic Examiners met in annual session December 12, and elected J. G. Roussel, President; Henry Tete, Secretary, and H. A. Price, of Alexandria, Treasurer.

Maine—The quarterly meeting of the Maine society was held in Augusta, January 2. "Laboratory Diagnosis" was discussed by J. S. Wadsworth, Portland; "State Regulation of Osteopathy," Hon. W. R. Pattangall, of Waterville; "The Osteopathic Technique of Cervical and Upper Dorsal Lesions with Treatment," Karl Breckenridge, of Bath; "Osteopathic Technique of Lumbar and Innominate Lesions with Treatment," W. T. Cox, of Saco; "Protection of the Public against Unqualified Practitioners," C. B. Doron, Bangor.

Massachusetts—The annual meeting of the Massachusetts Society was held in Boston January 2. An excellent program was presented in part as follows: "Spinal Mechanics—Demonstration," Lester R. Whitaker, Boston; "Symposium on Pressure Anaesthesia," R. K. Smith, Francis A. Cave, C. D. Thore, Boston; "The Art of Adjustment," Warren B. Mack, Lynn; Symposium on the Eye, "Cataract," with case reports, C. E. Farnum, Newport, R. I.; "Traumatic Blindness," with case reports, Peter J. Wright, Hyde Park; "Nasal Duct Obstruction," Clarence H. Wall, Providence, R. I. Discussion led by A. W. Hart and A. W. Rogers, Boston.

Afternoon Session—"Catarrhal Deafness with Technique," K. L. Ashorn; Discussion, Geo. D. Wheeler; case reports, J. Oliver Sartwell; "Gastrectasis and Gastroptosis," Wilfred E. Harris, Cambridge; "Technique of Spinal Adjustment," Benjamin F. Riley, New Haven, Conn. "Arthritis of Hip and Knee Joint," with report of cases, William H. Jones, Marlboro.

At the business session, the following officers were elected: President, Warren B. Mack, Lynn; Vice-President, William G. Brooks, Boston; Secretary, Mabel A. Langley, Boston; Treasurer, Herbert E. Wright, Malden.

The annual dinner held at the night session was a success and closed one of the best meetings in the history of the organization.

It is the purpose of the organization to hold monthly meetings throughout the coming year.

MABEL A. LANGLEY, D. O., *Sec.*

Frank B. Lake, D. O., Boston, gave an interesting talk before the Iota Tau Sigma fraternity of the Massachusetts College, December 10. He dealt with the practical problems, which will be of interest to the students.

Michigan—Osteopathic physicians of Detroit organized a society on December 9th. The purpose of the organization was to cultivate a heartier spirit of harmony and fraternity among the members, while at the same time opening up means of educating the public in matters of general osteopathic interest and health. The organization is entitled "The Detroit Osteopathic Society," and the following officers were elected: President, M. P. Browning; Vice-President, Alice M. Deane; Secretary, A. S. Hollis; Treasurer, M. E. Hard; Statistician, C. B. Stevens.

A. S. HOLLIS, D. O., *Sec.*

Missouri—The St. Louis Society held its December meeting on the 15th. A. J. Lofgreen gave an excellent paper on "The Importance of Diagnostic Technique." The discussion was led by R. E. Murrell, of Kirkwood. The latter part of the evening was spent in a general discussion of various topics of interest. The meeting was well attended.

CAROLINE L. WEBER, D. O., *Sec.*

THE GREATER KANSAS CITY ASSOCIATION holds monthly meetings on the first Tuesday of each month and starts promptly at 7:30. At the January meeting, "Goitre" was discussed by Alma C. Kinney; "Practical Points in Bedside Diagnosis," George J. Conley; "Pneumonia and Its Treatment," Harriet N. Crawford; "Educational Report," J. W. Burkett.

A. A. KAISER, D. O., *Sec.*

THE MISSOURI ASSOCIATION and the KANSAS ASSOCIATION announce a joint meeting in Kansas City, Mo., May 13, 14 and 15. The program has already been outlined and furnishes much excellent material. A Better Babies Contest will be conducted by Drs. Livingstone, Jenette Bolles and Leinbach. R. H. Williams, of Kansas City, the chairman of the Program Committee of both state organizations, as well as chairman of the Publicity Committee of each, is putting his usual energy into this program and intends to make the meeting a success. The program as outlined certainly deserves to be heard by every osteopathic physician in the two states. It will be printed in full in an early issue of this JOURNAL.

THE NORTHWEST ASSOCIATION met in Kansas City January 16, when R. K. Smith, of Boston, was the guest of honor. At the afternoon session he conducted orthopedic clinics and discussed orthopedic surgery.

After a formal dinner at the Hotel Baltimore Dr. Smith gave a public lecture, "The Conquest of Disease." R. H. Williams was in charge of the arrangements and of the publicity work.

New York—The Hudson River Osteopathic Association met January 9 with Dr. A. E. Were, of Albany. There was a good attendance. Cards were played and supper was served later by the host.

THE NEW YORK CITY SOCIETY held the December meeting at the New York Osteopathic Clinic on December 19. "Acute Practice" was the subject of an address given by E. C. Link, of Stamford, Conn.; "Scarlet Fever" was discussed by John A. DeTienne, of Brooklyn, N. Y. The organization was addressed by the distinguished actress, Madame Pilar Morin, on her method of visualized breath control for the development of flexibility, poise and dynamic power.

At the January meeting, J. Ivan Dufur of Philadelphia will discuss "The Gait in Nervous Diseases."

Ohio—The seventeenth annual meeing of the Ohio Society was held in Columbus, December 16, 17. The meeting was probably the best in interest and attendance the Society has held. Dr. Louisa Burns, of the Research Institute, announced the discovery of a pathogenic organism in the blood, altogether new to medical science. In honor of Dr. Burns and in recognition to her contribution to the science, the society unanimously adopted a resolution christening the new discovered disease as "Burns' Anemia." The program was carried out in part as follows: "Osteopathic Technique," A. S. Hollis, Detroit; "Osteopthic Treatment of the Prostrate Gland," Wm. S. Pierce, Lima; "Obstetrics, Using Life-size Manikin for Demonstration," D. S. B. Pennock, Philadelphia; "The Thyroid Gland, with Clinic," A. W. Cloud, Canton; "Osteopathic Prognosis," A. S. Hollis, Detroit; "Application of the Abbott Cast Upon Clinic," M. F. Hulett, Columbus; "Blastomycotic and Other Anemias," Louisa Burns, Chicago.

Second day's session: "The Importance of Routine Examination in General Practice," was discussed by C. V. Kerr, Cleveland; "What Is Osteopathic Treatment?" M. E. Clark, Indianapolis; "Partial Deafness, Nose and Throat Affections, with Clinics," J. Deason, Chicago; "How to Increase Osteopathic Interest," M. E. Clark, Indianopalis; "Report of Interesting Cases," J. F. Bumpus, East Liverpool; Question box conducted by M. E. Clark, Indianoplis.

The officers of the previous year were re-elected as follows: President, R. W. Sanborn, Akron; secretary, L. A. Bumstead, Delaware; treasurer, F. E. Corkwell, Newark; A. L. Miller, of Cleveland was elected vice-president in place of C. M. T. Hulett who has removed from the state.

L. A. BUMSTEAD, D. O., *Sec.*

Ontario—The Western Ontario Society met in London, December 30. The case Record Blanks Symposium was the first feature of the program. "General Diagnosis" was the subject discussed by W. A. Gossman; "Eye in General Practice" was discussed by R. F. Parker; "Ear, Nose and Throat Work," J. G. Heilemann; discussion by W. K. Jacobs. At the afternoon session, "Technique in the Cervical Region" was discussed by J. N. MacRae; "Dorsal Region," E. J. Gray; "Office Methods," G. V. Hilborn; "Blood Pressure," E. S. Detwiler.

C. R. MERRILL, D. O., *Sec.*

Oregon—The committee on general arrangement for A. O. A. Convention at Portland next August has been appointed. The committee is holding frequent meetings and preparing great things. Portland has always been unique in her entertainments. The osteopaths are not slow. Don't forget the A. O. A. at Portland, 1915.

THE PORTLAND OSTEOPATHIC ASSOCIATION held its last meeting at Dr. Lacy's office. An interesting clinic was presented and the climax was reached when Dr. Otis Akin brought in a leg that he had just removed from a case of senile gangrene. A little demonstration in dissection of the knee joint took us back to good old school days, and doubtless proved profitable to all.

THE VAN BRAKLE HEALTH OFFICER case seems to be settled at last and another victory has been won for osteopathy. Our representative has once more been successful, this time in the Supreme Court, and now the M. D.'s are co-operating with him.

THE OREGON MEDICAL BOARD has just met and eight osteopaths took the examination.

Virginia—An energetic campaign is being waged by the Publicity Manager of the Virginia Osteopathic Society in the interest of local organizations. The state has had a creditable State Society for several years and the meetings are well attended. The State meetings, however, are held semi-annually and the inception of this campaign was with the knowledge that publicity work suffers a serious handicap with meetings six months apart. Although publicity is the keynote of this campaign for local organization, other necessities are recognized and pointed out to secure interest and co-operation: To quote from a circular letter sent out recently: "Our one imperative need at the present time is something to enthuse and to stimulate us from day to day; something to develop individual initiative and originality; something to fuse our friendships; something to weld together our professional interests; and above all, something to cast the die with which to mold public opinion in our communities. This can only be done continuously and uninterruptedly by local organizations."

The spirit of this campaign—which is only a few weeks old—is winning active support all over the state and steps to organize are well under way at several points.

THE TIDEWATER SOCIETY was organized at Norfolk, December 5, with the following officers: President, M. L. Richardson, Norfolk; vice-

president, R. S. Bagley, Suffolk; secretary, L. C. McCoy, Norfolk; treasurer, S. H. Bright, Norfolk. Meetings to be held semi-monthly.

Within a short time it is expected the whole State will be covered with local organizations and much good is anticipated therefrom.

M. L. RICHARDSON, D. O.,
Manager Press Bureau.

Washington—The session in Tacoma met on January 4 and organized a city society. Meetings will be held at frequent intervals.

Washington—J. E. Hodgson, of Spokane, was elected treasurer of the State Board of Medical Examiners of Washington at the January meeting.

The licenses of Drs. Macy, of Seattle, and M. L. Briscoe, of Tacoma, to practice osteopathy were revoked. The following doctors were granted licenses to practice osteopathy: W. E. Abegglen, W. R. Dewar, Luther Holt, R. C. Mayo, J. F. Boynter, J. G. McMath, C. W. Strance.

The next examination will be held in Seattle July 6th to 9th.

Notes and Personals

ACADEMY OF CLINICAL RESEARCH

Case record blanks have been prepared by the Academy and are available to any member of the profession who may wish to use them. The blanks and binders are sold at manufacturer's cost without any profit added. The first sheet costs $3.60 per thousand, $1.85 for 500, $1.00 for 250. The second sheet costs $2.50 for 1,000, $1.35 for 500, $.75 for 250. Transportation charges extra.

The binder for daily use, black seal leather, with alphabetical index, $2.45; canvas with alphabetical index, $2.10; binder for permanent filing, with alphabetical index, $1.55; 200 records bound in one book. Make remittances to H. S. Bunting and send the orders to Osteopathic Publishing Co., 8 South Clinton street, Chicago, adding $.10 exchange, if personal checks are sent.

Orders for binders should come in promptly or this remarkably low price will be withdrawn. It was secured only on condition that a certain quantity be sold.

VAN BRAKLE WINS IN HIGHEST COURT

The Supreme Court of Oregon has handed down a decision in which it establishes the right of J. A. Van Brakle, D. O., to the position of health officer of Clackamas County. The Supreme Court holds that the state medical organization and others who opposed Dr. Van Brakle's appointment and took the case through all of the courts were in error in the way in which they proceded, that a process of law should have been resorted to. It is understood that this ends the litigation, which lasted for eighteen months.

CHICAGO ALUMNI

The Alumni Association of the Chicago College of Osteopathy entertained well-known osteopathic physicians who were in the city attending the post-graduate work of the College on December 20. At a banquet held, addresses were made by the following: R. H. Nichols, Boston; E. S. Harvey, Detroit; Della B. Caldwell, Des Moines; C. M. Proctor, Ames, Ia.; D. Webb Granberry, Orange, N. J.; Rachel Read, Tokio, Japan; Ira Richardson, Fremont, Neb.; A. B. Hobson, Detroit; A. Vallier, Columbus, Neb., and J. H. Baughman, Connersville, Ind.

THE NEW CALIFORNIA COLLEGE

The College of Osteopathic Physicians and Surgeons, Los Angeles, Calif., announces the February class to begin on February 1st. The term of matriculation will be for sixteen weeks, exclusive of holidays and graduating exercises, closing May 27th. The summer term will be conducted to enable students to make up back work, and for the post-graduate courses, only, extending from May 24th to September 16th. The regular fall term will open September 27th.

The course next summer will be arranged particularly to meet the needs of osteopathic physicians who may visit Los Angeles, following the meeting of the Association in Portland and the celebration of Osteopathy Day in San Francisco a few days following.

TO MODIFY VACCINATION LAW

A bill has been introduced in the New York Legislature which provides that public schools can compel vaccination of children only when smallpox appears in the vicinity of the institution. The measure has the support of the state health and state education departments and it is hoped that it will end a very complicated state of affairs that has existed in New York State for a number of years.

A FAIR-MINDED MEDICAL WRITER

Edward F. Bowers, M. D., who writes very largely for Sunday supplements in a number of papers of the larger cities, very frequently mentions osteopathy and apparently he is not ashamed to mention it, as he does not call it massage, or vibration or some other term which other medical writers often use in connection with it. In a recent article he frankly admits that many ideas and methods long practised by osteopaths are being appropriated by members of his profession. He freely admits that the subluxation of the sacro-iliac joint was first discovered by the osteopaths and appropriated later by the regulars. He further states that physicians and surgeons all over the world are realizing the importance of the normal alignment of spinal vertebrae. He also predicts that in a few years osteopathy will be recognized as a branch of medicine, with chairs in many of the universities and colleges. (Some of them would have the chair now if they could secure a competent osteopath willing to give the course.)

A FRANK ADMISSION

A physician writing to the *Boston Medical and Surgical Journal*, states that he inoculated a man

with typhoid prophylactic and on the day following a very severe pain in the right sciatic nerve set up and the patient had a temperature of 101, and was ill for about two weeks. On investigation the physician found that the man had suffered a year or two previously from an attack of sciatica and he publishes this experience to substantiate that of others that the inoculation of the typhoid prophylactic serum may cause a recurrence of *latent diseases.*

Now a good many people have "latent diseases" and few of them, perhaps, are given the opportunity of telling about them to the determined experimenter, as the army or navy surgeon, and if they do tell, perhaps the physician does not regard them as being any longer "latent." But a case of sciatica of two or three years previous is reopened with great severity, and many other diseases may be made active by this abominable practice.

PUBLICITY THROUGH ATHLETICS

The A. S. O. basketball team of Kirksville made a trip during the holidays through the larger cities of the South, as far as Georgia, and, while they were unsuccessful in many of the games where they came in contact with Y. M. C. A. teams from the larger cities, at the same time they took the Osteopathic College into athletics and directed to it the attention of young men of a very desirable class. The papers everywhere gave them very favorable mention.

In many of the cities the team was entertained in the homes of prominent osteopathic physicians; among the number Dr. Skidmore entertained the team at luncheon in Jackson, Tenn., and Dr. Thos. L. Davis, of Augusta, Ga., gave a banquet to the team which was very favorably commented upon by the city papers.

The team of the Des Moines Still College also played several games which received favorable reports in the newspapers. This is a departure which is heartily recommended to all the schools of osteopathy which maintain athletic teams.

FOREFATHERS' DAY IN HONOLULU

Dr. Samuel Denham Barnes was toastmaster at a banquet given at the Forefathers' Day celebration, December 21, in Honolulu, when the following among other toasts were responded to: "Experiences with Puritanism," Governor Lucius E. Pinkham, Governor of Territory of Hawaii; "Forefathers in Hawaii," Honorable Sanford B. Dole, formerly President of the Republic of Hawaii and afterward the first territorial Governor and now first federal judge of the District of Hawaii and is known as Hawaii's first citizen. "The Good Ship Supply," Major-General William Carter, of the United States Army; "Puritan and Cavalier." Hon. Malcolm A. Franklin, Collector of the Port. Dr. Barnes is the President of the Society of Sons of the American Revolution and as such presided at this banquet.

CHICAGO COLLEGE POST-GRADUATE COURSE

The two weeks' post-graduate course given at the holiday time by the Chicago College was well attended and general satisfaction was expressed by those who took the course. Considerable attention was given to the treatment of catarrhal deafness, Drs. Edwards, Deason and Granberry being instructors in this specialty. Special diagnosis was presented by R. H. Nichols, of Boston, for the entire term. Technique and Practice were presented by Drs. A. S. Hollis, Detroit; H. R. Holmes, H. H. Gryette and Edgar S. Comstock, Chicago; F. P. Millard, Toronto. Surgery, J. B. Littlejohn, Chicago; Gynecology, Edith Littlejohn and Blanche M. Elfrink, Chicago; Orthopedics, J. W. Maltby, Chicago; Laboratory Diagnosis, S. V. Robuck, Chicago, and many other special lectures by well-known teachers. Forty-seven practicians were members of this post-graduate class, representing almost the entire union and one or two from foreign countries.

THE PUBLIC HEALTH SERVICE

Senator Works, of California, on January 5th and 6th, delivered a remarkable address in the United States Senate on this subject. The address covers more than 100 pages of a closely printed government report and contains a mine of information on this important subject.

It is generally known that the Senator is a believer in Christian Science, and he has much in this address supporting its claims, but it all trains on the point that what people want and what meets their needs should not be discriminated against by the Government.

The following quotation from the address seems to state his attitude and the position from which he prepared the address.

"I would not abolish or overthrow the Public Health Service if I could. I would make it broader, more tolerant, more humane. I would have it presided over by a man of broad, tolerant, and humanitarian views, who could look beyond the dead line of the so-called regular school of medicine and seek for, find, and apply for the common welfare all that is good in every school of medicine, old and new, and all other methods of healing, saving none, favoring none."

For copy of the address write Senator John D. Works, Senate Chamber, Washington, D. C.

PRESS BUREAU

The Ohio State Cnvention in session December 16 and 17, appropriated $100 for the A. O. A. Press Bureau work. If every other state would be equally alive to the vital necessity of the support of this department the work would not be interrupted, but this will result unless the profession provides the financial support at once.

The great newspapers of New York City have had a change of heart recently, thanks to the A. O. A. Press Bureau. *The New York Times,* which has been a bitter opponent of osteopathy, gave liberal space to news reports of the recent state convention there. *The New York Tribune,* one of the most conservative and dignified newspapers in the world, soon after published one-

third of a page with an illustration upon the work in the Still-Hildreth Sanitarium. *The New York Evening Journal* of December 14 published an illustrated article on Dr. Still, with a double-column headline. The prominence given to osteopathy in these powerful papers will have a great moral effect upon newspapers all over the country, as those which have been disinclined to publish osteopathic articles will naturally follow the example of their great leaders in the metropolis.

SAYS SERUM KILLED SON

Another case of lockjaw following vaccination is recently reported in Brooklyn, where a young boy was required to be vaccinated under the school law, and the wound became infected, according to the doctor, and death from tetanus speedily resulted.

CAST SAVES GIRL'S LIFE

It is reported from Freeport, L. I., that a few months ago a girl of nine fell from a wall and, as demonstrated by the X-ray, fractured two vertebrae of the neck. Extension was made, plaster of paris cast applied, and after about two months the child seems to be in perfect health.

PERSONALS

Edward D. King, of Detroit, spent two weeks at the holiday time doing post-graduate work in Chicago. While in that city, he was the guest of the Illinois Athletic Club.

Joseph Fogarty, of LaPorte, Ind., spent two weeks with the post-graduate work of the Chicago College of Osteopathy at the holiday time.

J. S. Crawford, of Denton, Texas, sustained the loss of his office and equipment, valued at about $2,500, in a recent fire. Insurance was only $500, which had recently been cut from $2,000. Dr. Crawford, who is President of the Texas Osteopathic Association, has found new quarters in the Denton County National Bank Building, of the same city.

Chas. C. Reid, of Denver, spent the holiday week East. While in Chicago he visited the post-graduate work of the Chicago College and the Research Institute of Chicago. Joined by his brothers, J. F. Reid, of Warren, Ohio, and Geo. W. Reid, of Worcester, Mass, they visited their old home in southern Illinois.

E. Florence Gair, of New York, spent the holiday time at Kirksville, visiting the family of George M. Laughlin. She reports the old doctor as improving steadily and sending greetings to his friends through the JOURNAL.

C. J. Gaddis, of Oakland, Calif., has recently moved into splendidly equipped offices on the sixth floor of the First National Bank Bldg. of that city. Dr. Gaddis is President of the California Association, and also is a trustee of the A. O. A.

Frederica F. Allabach, a recent graduate of the American School of Osteopathy and later the Philadelphia College, announces that she will hereafter be associated in the practice of osteopathy with her parents, Drs. L. D. and Louise B. Allabach, at 62 Hoyt street, Brooklyn, N. Y., and will give particular attention to out-of-office calls.

E. F. M. Wendelstadt, recently of Montclair, N. J., and New York City, sends New Year greetings to his friends from Los Angeles, where he is located in the Bronx Apartments, and is making a specialty of the treatment of hernia.

Thos. L. Davis, of Augusta, Ga., announces the removal of his offices to the new skyscraper, the Chronicle Building, of that city.

Dr. Nellie L. Parker announces that she has sold her practice in Carlinville, Ill., and has bought the practice of Drs. Charles M. and Emma M. Sherrill in Mt. Carmel, Ill., where she will hereafter practice. Drs. Sherrill will spend the remainder of the winter in St. Petersburg, Fla., before re-entering practice.

G. W. Bumpus of Denver served as physician to the "Billy Sunday" party during their recent stay in that city.

BORN

To Dr. and Mrs. F. M. Plummer, 466 Main street, Orange, N. J., December 20, 1914, a son.

To Dr. and Mrs. Arthur C. Hardy, of Lockhart, Texas, January 2, a daughter, Florence Luella.

DIED

At his home in Lincoln, Neb., suddenly, Dr. Charles W. Little, one of the pioneer osteopaths of that state.

At her home in Brooklyn, N. Y., December 21st in the 76th year of her age, Mrs. Harriett M. Sullivan, mother of Drs. H. B. Sullivan, of Detroit; Joseph H. Sullivan, of Chicago, and A. T. Sullivan, of New York City.

At her home in Darlington, Ind., November 16, Mrs. Lucinda Booher, mother of Dr. D. Ella McNicoll, of Frankfort, Ind.

At the home of his son-in-law, Dr. Earl McCracken, of Shreveport, La., on December 5th, Mr. M. Ferguson, of Jackson, Miss., age 79.

At his home in Kirksville, Mo., on December 26th, in the 83d year of his age, Mr. James M. Bell, father of Dr. Adaline Bell, of Cynthiana, Ky.

DEATH OF DR. HOFSESS

J. W. Hofsess, president of Central College of Osteopathy, died at his home in Kansas City, Mo., the morning of January 1st. Dr. Hofsess was 45 years of age. Death was due to pernicious anemia. The doctor gave up his practice a year ago. He was a member of the A. O. A. and at one time dean of the S. S. Still College of Osteopathy.

Dr. Hofsess is survived by Mrs. Hofsess and four daughters, Lorna, Ellen, Juanita and Lucille, and by his sister, Mary Hofsess.

DEATH OF DR. ROBB

In Lewis G. Robb death has claimed another shining mark. The end came after an illness of three or four months from diabetes, at his

home in Berkely, Calif., on the last day of the old year.

Dr. Robb was a native of Oklahoma and entered the A. S. O., where he took rank as a student and honest worker. He assisted Dr. Deason in most of his experimental work and was one of the closest students of physiology in the profession.

He located after graduation in California and soon established a very large practice, much of it bedside work, and no doubt there he produced conditions which later brought on the trouble from which young people so seldom recover. After a year or two in first location, in order to secure rest and the time he demanded for study, he opened offices in San Francisco, with his residence in Berkely. The editor of the JOURNAL had a letter from him just a day or two before his death in regard to the proof sheets of the article printed in this issue upon which he had been working for about three years. To him, as a thorough student of physiology and cell reactions, the treatment of sick people meant adjustment of body conditions. It included no drug medication, and his success had fully satisfied him that it was the right treatment and that people were ready to accept it when properly applied.

His many friends will be greatly pained to learn of his early death and their sympathy will go out to his mother and sisters who survive him. To the development of osteopathy his death is a distinct loss.

WANTS TO BUY PRACTICE

A graduate of the A. S. O. of June, 1912, wants to buy a practice in a large city. Address (1912), care of Journal of American Osteopathic Association, Box E, Orange, N. J.

HOW ABOUT THIS TRIP?

The Annual Osteopathic Meeting at Portland, Ore., in 1915, affords a rare opportunity for seeing not only one of the most beautiful cities of the United States, but also a region rare in its worth and loveliness. The Northwest is the "Cream" spot of the country and the far Northwest—that bordering Puget Sound and the Columbia River—is particularly attractive. Portland, the "Sound" cities—Tacoma, Seattle, Olympia, Everett, Bellingham, and Victoria and Vancouver, B. C.—are revelations to Easterners, and represent an element of progress and growth surprising to them.

The Northern Pacific Railway reaches all these points—also the Yellowstone Park—with its very complete train service. Its dining car service is noted for its Great Big Baked Potatoes and Great Big Baked Apples.

The new steamer service of the Great Northern Pacific S. S. Line between Portland-Astoria and San Francisco supplies another link in a delightful rail and ocean trip to or from the Yellowstone Park, the Northwest Coast and Portland, and the Expositions in California in 1915.

APPLICATIONS FOR MEMBERSHIP

ARIZONA.

Collins, Paul R. (A.), Brophy Bldg., Douglas.

CALIFORNIA.

Dickey, Wm. F. (P.), 1237 S. Hope St., Los Angeles.
Elliott, David H. (Bn.), Spreckles Bldg., San Diego.
Ferrand, R. L. (P.), 142 Forest Ave., Pacific Grove.
Gass, L. D. (A.), Ferguson Bldg., Los Angeles.
Gotham, Thos. B. (P.), Elsinore.
Harvey, Leslie V. (SC.), Ninth and Euclid Ave., Upland.
Hebb, Flora E. (LA.), 645 East St., San Bernadino.
Humiston, Sarah G. (LA.), 106½ E. 4th St., Santa Ana.
Noble, Nelson G. (P.), Dalziel Bldg., Oakland.
Sellars, D. Frances (SC.), Berkeley Nat. Bank Bldg., Berkeley.
Smith, H. R. (A.), 1st Nat. Bank Bldg., Long Beach.
Taylor, Warren (P.), Hopkins Bldg., Santa Barbara.
Walsworth, C. B. (SC.), Lankershim Bldg., Los Angeles.
Waters, A. R. (A.), 4th St. and Broadway, Chico.

COLORADO.

Frost, E. M. (LA.), 435 Maxwell Ave., Boulder.
Halcomb, A. L. (LA.), 4th and Victor Aves., Victor.
Kellogg, W. E. (A.), Sterling.
Lewis, J. L. (A.), Bank Bldg., Colorado Springs.

CONNECTICUT.

Bush, Earl A. (A.), 902 Main St., Hartford.

FLORIDA.

Buckmaster, R. P. (A.), 132 S. Orange Ave., Orlando.

IDAHO.

Church, Jno. M. (NL.), Lewiston.
Kingsbury, W. S. (LA.), Idaho Bldg., Boise.
Savage, James A. (A.), Barnard Bldg., Wallace.

ILLINOIS.

Herrold, S. Alletta (A.), I. O. O. F. Bldg., Shelbyville.
MacGregor, P. J. (Ac.), O. T. & B. Co. Bldg., Olney.
Roddy, Robt. (A.), Cor. Tremont and 2nd Sts., Kewanee.
Shellenberger, N. W. (A.), 229 N. Genessee St., Waukegan.
Utley, Ralph E. (Ac.), 820 S. Boulevard, Oak Park.
Wise, Hugh Thomas (A.), Main St., Rockford.

INDIANA.

Jeffery, Jas. C. (A.), Morrison Bldg., Shelbyville.

IOWA.

Graham, Geo. W. (A.), Masonic Temple, Marshalltown.
Quick, Roy T. (A.), Onawa.
Rice, Bert H. (SC.), Vinton.

KANSAS.

Brenz, Louis Edward (A.), Summit and 5th Aves., Arkansas City.
Decker, J. (SC.), 301 W. Fourth St., Larned.
Owens, Guy E. (S.), Mills Bldg., Topeka.
Quisenbery, Mary (Ce.), Lyons.

MICHIGAN.

Gidley, J. B. (A.), F.-P. Smith Bldg., Flint.
Gilchrist, Eliz. L. (A.), 337 Lincoln Ave., Detroit.

MINNESOTA.

Evans, John G. (A.), 308½ S. B'way, Rochester.

MISSOURI.

Evans, G. W. (Ce.), Shukert Bldg., Kansas City.
Kjerner, Samuel H. (A.), Waldheim Bldg., Kansas City.
Shaw, Minnie Avis (A.), Walther Wymore Bldg., Jefferson City.
Weed, O. G. (S.), Corby Forsee Bldg., St. Joseph.

MONTANA.

Clarke, Emily M. (LA.), Miles City.
Payne, Geo. H. (A.), 1st Nat. Bank Bldg., Columbus.

NEBRASKA.

Jones, T. T. (SC.), Whitman Bldg., Wayne.
Laird, A. D. (SC.), 2513 Farnam St., Omaha.

NEW HAMPSHIRE.

Hawley, Jno. Winthrop (A.), Amoskeg Bldg., Manchester.
Parfitt, Jno. William (A)., Pembroke Bldg., Manchester.

NEW JERSEY.

Coffee, Eugene M. (Ph.), Collingswood.

NEW YORK.

Cook, Geo. T. (At.), 32 Glenwood Ave., Buffalo.
Schofield, Jennie M. (A.), 199 Hodge Ave., Buffalo.
Stauffer, Grace H. (A.), 281 Wohlers Ave., Buffalo.
White, Annette M. (A.), 514 W. 114th St., New York City.

OHIO.

Bay, Daisy E. Washburn (A.), Spitzer Bldg., Toledo.
Cole, Earl A. (A.), 163 S. Main St., Bowling Green.
Smith, F. C. (A.), 207½ W. Center St., Marion.
Streight, Nettie B. (SC.), 105 W. Mechanic St., Wapakoneta.

OKLAHOMA.

Ewing, Ernest (A.), 107½ Woodson St., El Reno.

OREGON.

Farrior, Jessie B. (LA.), Morgan Bldg., Portland.
Haslop, Edmund B. (Mc.), Morgan Bldg., Portland.
Kinney, J. E. (La.), Astoria.
Northrup, R. B. (P.), Morgan Bldg., Portland.
Snell, Daniel E. (La.), Perkins Bldg., Roseburg.
Walker, C. E. (SC.), F. G. Nat. Bank Bldg., Forest Grove.

PENNSYLVANIA.

Sexton, Wm. H. (A.), 527 R. E. Trust Bldg., Philadelphia.
Williams, Mary A. (At.), 1115 Chartiers Ave., Pittsburgh.

RHODE ISLAND.

Kellogg, Reid (A.), 139 Mathewson St., Providence.

SOUTH DAKOTA.

Taylor, M. E. (SC.), Woonsocket.

TENNESSEE.

Price, Vivian H. (SS.), Walker Bldg., Covington.
Rhoads, C. J. (A.), 212 Washington Ave., Union City.

TEXAS.

Alkire, Margaret M. (A.), 201 W. Missouri St., El Paso.
Knight, J. (A.), Foote Bldg., McKinney.
Singleton, Robert O. (Ce.), Mineral Wells.

WASHINGTON.

Abegglen, Walter E. (LA.), Colfax.
DuBois, R. Omer (LA.), Auburn.
McFadden, J. C. (SC.), Sunset Bldg., Bellingham.
Turner, Annie S. ( ), 305 Bellevue St., N., Seattle.
Walker, L. H. (A.), Olympia Bldg., Ellenburg.

WISCONSIN.

Coplantz, Russ (A.), Register Bldg., Portage.
Trevitt, Edith (A.), C. & S. Bank Bldg., Monroe.

CANADA.

Estey, Guy W. (Mc.), York Apts., Sherbrooke, Quebec.

CHANGES OF ADDRESS

Bereman, J. Worling, from Garden City to Wulfekuhler Bldg., Leavenworth, Kansas.

Berrow, A. W., from 420 to 610 Central Ave., Hot Springs, Ark.

Bohnsack, Anita E., from Portland, Oregon, to 113 N. Frederick St., Cape Girardeau, Mo.

Boyes, M. A., from Woodsfield, Ohio, to 1003 Market St., Parkersburg, W. Va.

Campbell, Mary Alice, from Upper Montclair, N. J., to The Coolidge Bldg., Brookline, Mass.

Chandler, A. J., from Durham to Box 473, Salisbury, N. C.

Cooper, William, from Cardiff, Wales, to 97 Mortimer St., Regent St., London, W., England.

Cramer, Myrtle A., from Los Angeles, to Brower Bldg., Bakersfield, Calif.

Deane, J. W., from Hastings, Minn., to Beresford, S. D.

Elliott, W. B., from Cordele to Davis Exchange Bank Bldg., Albany, Ga.

Farris, W. B., from Wichita Falls, Texas, to Merchants' Nat. Bank Bldg., Fort Smith, Ark.

Glassco, Daisy B., from Knightstown to Maxim Bldg., New Castle, Ind.

Haile, Florence R., from Dallas, Texas, to 604 W. 125th St., New York City.

Jacobs, Eloisa Fairbanks, from Boston to 156 Harvard St., Brookline, Mass.

James, I. L., from Woodruff Bldg. to Holland Bldg., Springfield, Mo.

Loving, A. S., from Palisades, Colo., to 226 N. Church St., Rockford, Ill.

Magers, J. A., from Albia to Moravia, Iowa.

Malone, J. A., from Union Nat. Bldg. to Carter Bldg., Houston, Texas.

Miller, Harry I., from Kirksville, Mo., to Union Utilities Bldg., Morgantown, W. Va.

Montague, H. C., from 211½ N. Broadway to Phoenix Bldg., Muskogee, Okla.

Oliphant, Pearl, maintains same office at Santa Cruz, Calif., and goes to San Francisco two days a week instead of having moved to San Francisco as stated in last issue of JOURNAL.

Parker, Nellie L. Haynes, from Carlinville to 516 Main St., Mt. Carmel, Ill.

Rader, Geo. B., from Columbus to 14 W. 2d St., Seymour, Ind.

Sage, N. L., from Royal Bank Chambers to Longheed Bldg., Calgary, Alberta.

Sands, Ord Ledyard, from 37 Madison Ave. to 6 E. 37th St., New York City.

Sharpe, Elizabeth, from 323 Gaines St. to State Bank Bldg., Little Rock, Ark.

Stetzer, Emma M., from Carlyle Apts. to 233 Langside St., Winnipeg, Manitoba.

Tedrick, C. A., from Hutchinson to Greensburg, Kansas.

Walker, L. Willard, from Roslindale to 24 Stone Rd., Belmont, Mass.

Walmsley, R., from Masonic Bldg. to Thatcher Blk., Pueblo, Colo.

Weaver-Wingerter, Charlotte, from 214 S. College St. to 186 S. Union St., Akron, Ohio.

Whallon, Grace, from Camden to State Bank Bldg., Little Rock, Ark.

White, Clara N., from Lamoni to Flynn Bldg., Des Moines, Iowa.

Whitney, C. L., from Enterprise, Oregon, to 714 Edgeware Rd., Los Angeles, Calif.

Young, W. E., from Bournemouth, England, to 47 Richmond Rd., Cardiff, Wales.

TO EVERY JOURNAL READER

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LET us talk over the educational plan a little. The press is gradually opening up to us. More perhaps because we have news for the people and present it properly to the papers than from any particular change of heart or policy on their part. It is very desirable that we be not left behind the other medical men in this matter of general publicity concerning Osteopathy. The public now expects to read in the newspapers about everything that is worth while. We have, or should have, much to tell the public of what our school of practice is doing. We must do this, but we must not stop there. That does not convince; that arrests their interest; and if kept up makes them ready or receptive for facts. How can we give them?

THE printed page is the means. Tennyson says: "Things seen are mightier than things heard." Printed facts, authorized statements, carry conviction. Have we such matter? We have; do you not use it? For many years the "Osteopathic Health" has been edited and sold by Dr. Bunting. A monthly publication, which you can subscribe for six months or a year, or you can order as many of any number as you wish. Each of the last two or three numbers has been devoted to a special subject and makes it very desirable if appropriately used. The "Herald of Osteopathy" now edited by George W. Reid and illustrated by Dr. Millard, prints some excellent matter, and its illustrations add greatly to its interest and value. Sample copies on request. (See advertising pages of this issue.). Then the Booklets of R. H. Williams, New Ridge Building, Kansas City. These are each devoted to one subject and it is well treated. They make good.

THIS brings us to speak of a brochure, "Why I Go to the Osteopath," which the A. O. A. sells. We sent out a few sample copies a few days ago and the orders are coming in by the thousand. The story has gone through three big editions in a few months. The author thinks so much of this that he would not sell the story. He supervised the publishing, but we pay him a royalty on all copies sold. This is the arrangement he has with the publishers of his many works of fiction, etc., and they are the terms on which we could get it. We don't want to say it is the *best* story ever written about osteopathy. That implies comparisons. So we will say it is a GOOD story—full of osteopathy—a master mind and an artistic hand convincing people by telling them how he was convinced. Nobody lays it aside after he has read the first paragraph, and the thing is so attractive and readable-looking, that if it is in sight a person will pick it up. If you have not seen a copy, ask for one. It sells for $4.00 per hundred, delivered to you with envelopes to match if you want them.

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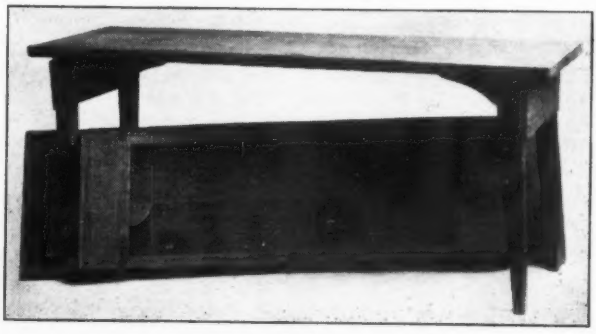

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PORTLAND, 1915

—VIA—

Glacier National Park

As the official route to the 1915 Convention of the American Osteopathic Association at Portland, Oregon—as the route between St. Paul and Portland of the special train that is to set out from Chicago via the Chicago Great Western—the Great Northern Railway has been selected in order that the Osteopaths while Portland-bound may "see America first," and particularly that they may see some of the wonders of Glacier National Park.

Glacier National Park lies directly alongside the main transcontinental track of the Great Northern Railway, the only playground of the nation that's located on the main line of a transcontinental route—some eleven hundred miles out from St. Paul-Minneapolis—and sits high up in the Rocky Mountains of northwestern Montana.

The splendid mountains of Glacier National Park extend from the Great Northern's track northward to the Canadian boundary, and from the Reservation of the Blackfeet Indians westward to the Flathead River—gorgeous-colored peaks ranging from 8,000 to 10,000 feet above sea-level that are giants of the Continental Divide—a tremendous mountainland 1,525 square miles in extent. From this "roof of America" waters start on journeys to the Pacific Ocean, to Hudson's Bay and to the Gulf of Mexico. Atop these mountains are eighty living glaciers, as inspiring as those ice-fields Americans have been crossing to Switzerland to see. Among the peaks are wonderful mountain lakes and noble cataracts and rollicking mountain streams. Many phenomena of Nature are within the Park also—such as Iceberg Lake, where ice-cakes float the summer through.

From Glacier Park station, at the main gate, the Automobile Highway, over which an efficient auto-stage service is maintained, extends northward along the rims of the Two Medicine and Cut Bank regions to St. Mary Lake, and thence northwestward up the Swift Current Valley to the mountains of the Many-Glacier country. Up St. Mary Lake the little ship "St. Mary" sails to the Going-to-the-Sun region, where Going-to-the-Sun Mountain is, and Citadel and Little Chief and Red Eagle. Auto-stages and launches thus push deep in among the giants of the Divide.

Up onto and over the mountains three skyland trails, along which a regular saddle-horse service is operated, scale the Divide itself. Gunsight Trail crosses the Divide by way of Gunsight Pass, and leads to Blackfeet and Sperry Glaciers. Swift Current Trail crosses the Divide by Swift Current Pass. Piegan Trail, a north and south route, follows the Divide.

The chain of mountain hotels and chalet groups that outstretches through Glacier Park is uniquely in harmony with these Rockies.

Glacier Park Hotel at Glacier Park Station, capacity 400 guests, erected at a cost of $500,000, is a mammoth hostelry with walls and galleries all of massive logs; it lacks in the matter of length only a few feet of the dimensions of the Capitol at Washington. The "forest lobby," and "open campfire" and carpets and hangings that are the handicraft of the Blackfeet Indians, the one-time proprietors of Glacier Park's mountains, are interesting features. Another mammoth mountain hotel, the "Many-Glacier," a companion to the "Glacier Park" but Swiss in architecture, stands on the shore of McDermott Lake—in the Park's very heart. Supplemental to these headquarters hostelries are nine chalet groups, each composed of picturesque log-and-stone-constructed dining-chalets, club-chalets, and dormitories, Swiss in design—nine veritable mountain villages.

The trip aboard the overland trains of the Great Northern Railway via Glacier National Park from St. Paul-Minneapolis across the Great Northwest to Portland is one of the most interesting rides by rail in America. The Rocky Mountains the Great Northern's track traverses for more than three hundred miles. At Glacier Park, in the shadow of the Park's south peaks, it crosses the main range of the Rockies; afterwards, in the grand canyon of the Kootenai for a hundred miles it follows through the Rockies' western spurs. Still further to the westward, the Great Northern scales the splendid Cascade Mountains—up through Tumwater Canyon, and down through Tye and Skykomish Canyons—one hundred miles of mountain track truly marvellous. Spokane in the Inland Empire, and Seattle and Tacoma on Puget Sound are cities worth seeing along the way.

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On Page 236 this issue.

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